The OIL and GAS JOURNAL

PRODUCING REFINING MARKETING

VOL. 23. NO. 41 TULSA, OKLAHOMA, MARCH 5, 1925

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Bazette Still Potent Crude Oil Factor

Average daily production in United States week ended Feb. 28, 1,933,178 bbls. Gain from previous week, 10,218 bbls.

Deeper Drilling Is Necessary to Thoroughly Test Area. Mid-Continent Production Declines Slightly

Highest daily average estimated production last year, week ended August 23, 2,057,319 bbls. Lowest January 12, 1,871,143 bbls.

By Andrew M. Rowley

"Those who have been participating in the funeral of Bazette may yet find the supposed corpse very much alive."

That statement, made on Wednesday of this week, by an experienced oil man who has been keeping in close touch with developments at Bazette, sums up the general situation at this time of the area of East Central Texas, which has been and still is so much in the limelight and which will have so far-reaching an effect upon the crude petroleum situation, not only of the Mid-Continent but of the entire country.

Early in the week the word was passed around the test of Penn and others and that of the Humphreys Boyd Oil Company appeared to be failures. Both were said to have been drilled deeply enough to show no oil was present. Then on Tuesday the Penn well broke forth with a flow of 20,000,000 feet of gas and about 30 barrels of salt water an hour. The salt water is bothering those watching the well for they have not as yet been able to explain to their own satisfaction where it is coming from.

It is entirely possible the producing horizon at Bazette, if one be there, is lower than it was found at Mexia, Powell and Wortham. In those three fields the sand was found anywhere from 2,915 to a total depth of 3,012 feet. The Penn well reached a depth of 3,086 feet when the gas and salt water resulted in operations being stopped. The Humphreys Boyd well is drilling out plug at 3,014 feet and will standardize to complete. It will probably be a week before anything really definite can be determined regarding the Humphreys Boyd well.

One thing is absolutely certain about the situation at Bazette. Regardless of what result is obtained in the Humphreys Boyd well, more wells will be drilled in that area to thoroughly test it. Companies holding acreage paid too much for the leases to permit two tests to condemn the whole area. And the feeling is growing it has been a mistake to set a certain depth as a dead line on probable production. As one man said, "The operators may have been fooled as to the depth the pay would be encountered and yet may have been right as to location of the field." An article on page 84 of this issue gives a most interesting account of the fault found at Bazette, while a map of the field is on page 29.

Bazette is probably the most important factor in the crude petroleum situation at this time. If oil is found there in large quantities, this production will be thrown upon the market within a short time and cannot help but be a most potent influence in the crude oil price situation. On the other hand, if the area proves to be a failure as far as production is concerned, it will be just as important because then the present possibility of considerable new production will have been removed and further advances in crude oil prices may be expected.

While production for the entire country showed a substantial increase during the past week, the output of the Mid-Continent area registered a slight decline. The deep sand area of the Tonkawa Field in Oklahoma was responsible for the big drop in production in that State. The decline has started in that producing horizon which has been such an important factor in holding up production. While the Wortham Field showed another increase during the past week, it was due entirely to further cleaning out of wells. All the present drilling wells in the field could be completed within the next two weeks.

The increase in production for the entire country came largely from California and the Rocky Mountain area the former being responsible for 8,000 barrels a day and the latter showing a gain of 4,000 barrels. The amount of new development work being done in California indicates production in that State will hold up and the big decline expected by some operators will hardly materialize in the near future. Deepening of the discovery well in the northern part of the Rosecrans Field there last week resulted in the opening of a new producing horizon, the well flowing 1,545 barrels of 36.6 gravity oil.

There is more drilling being done now in the North Central Texas area than since the boom days of Ranger and Burkburnett. The Gulf Coast section of Texas is also feeling the stimulas of higher prices and good wells are resulting from the increased work there. The same condition prevails in Arkansas, especially in the heavy oil producing districts, and in Louisiana and other major crude oil producing areas.

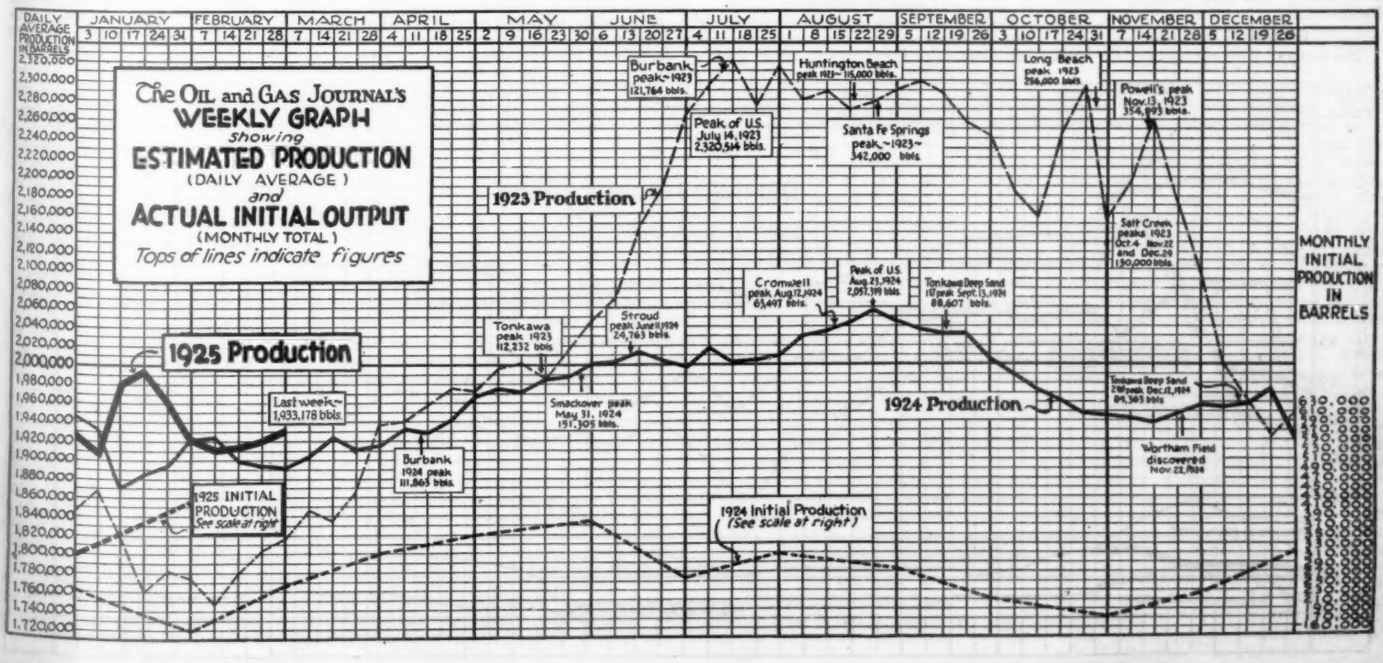
While the refined oil market is showing signs of weakness which may result in a decreased demand for crude on the part of refiners and a resultant effect on the trend for higher crude oil prices, the big features of the crude oil market still is Bazette.

PRODUCTION IN THE UNITED STATES

Estimated daily average crude oil production in the United States for the week ended February 28 and a comparison with previous week follows:

	Feb. 28	Feb. 21
Oklahoma—Northern Fields:		
Tonkawa	90,495	97,250
Burbank	56,795	56,980
Other Osage Fields	36,865	36,840
Cushing and Shamrock	22,935	22,980
Bristow and Eastern Bristow	34,315	34,840
Cromwell	38,685	38,460
Papoose	33,015	35,870
Northern Miscellaneous	98,395	97,380
Southern Fields	64,090	63,880
Total Oklahoma	475,590	484,480
Northern Louisiana	49,493	50,057
Arkansas —		
El Dorado and Calion	9,140	9,225
Smackover Light	32,310	32,230
Smackover Heavy	62,350	59,660
Stephens and Nevada	3,485	3,080
Total Arkansas	107,285	104,195
North Central Texas	135,420	132,460
Powell	56,200	58,260
Mexia, Currie, Richland, etc.	32,770	33,790
Wortham	81,340	74,830
Kansas	85,525	86,025
Total Mid-Continent Area	1,023,623	1,024,097
Gulf Coast	72,920	73,710
Southwest Texas	44,500	44,760
Eastern	98,600	98,680
Rocky Mountain Area	89,535	85,713
California—		
Santa Fe Springs	47,500	47,000
Long Beach	117,000	117,000
Huntington Beach	41,500	41,000
Torrance	40,000	40,000
Dominguez	53,000	52,000
Remainder of State	305,000	299,000
Total California	604,000	596,000
Total United States	1,933,178	1,922,960

Increase, 10,218 Barrels



Prices Generally Lower in Oklahoma

Motor Fuels, Burning Oils and Fuels Continue Reactionary Trend. Situation Believed Only Temporary. Additional Spot Contracts

By C. O. Willson

The opening of a new month failed to halt the reactionary trend which first made its appearance in the Oklahoma (Group 3) refined market the latter part of February, with the result that the past week witnessed one of the most serious breaks in prices that has occurred in several months. The market at this writing is experiencing one of those panicky developments in which, as in times past, a sufficient number of sellers have rushed into the market anxious to dispose of their products regardless of price.

A week ago the slight slump in prices, notably gasoline, was explained as a development of the fact that the market was in the hands of marketers who, through their long purchases of early February and January were able to undersell the refiners who had advanced their prices in line with increased crude costs. It was felt with the end of February this resale material would largely disappear and the amount to be sold in March would be so small it would be of no importance and the market would once more be established by the refiners at the prices they have been endeavoring to maintain since the middle of February.

A market situation exactly opposite in many respects has developed. Several Oklahoma refiners with few orders placed on their books the last half of February have been offering their output at prices which in several instances have been lowered daily.

Several marketers, on the other hand, have also reversed their February position. Many had shared the opinion of the sellers that gasoline prices would again advance in March, and, encouraged by their substantial profits in February bought long for March at prices which are now below the spot market. Marketers with these purchases yet to be placed with jobbers have naturally joined with several of the larger refiners who are endeavoring to prevent further price reductions. There are other marketers who sensed the fact that the weakness was not to end with the first of March and they have been selling short and are now in a position to benefit as much as they did in their long purchases during February.

General Price Changes

The general price changes for the week in Oklahoma spot market were as follows:

A 1-cent per gallon reduction in practically all grades of gasoline including natural gasolines and blends.

A 5 to 7½-cent per barrel reduction in all grades of fuel oil.

A one-eighth to one-fourth-cent per gallon reduction in gas oils and distillates and some grades of kerosene.

Although this covers the general changes in quotations, it does not tell the whole story of the market collapse. There were a few instances where refiners in their desire to dispose of their gasoline were offering the trade both large and small quantities for immediate and future delivery at prices 1½ cents under those prevailing a week ago. These sales for future delivery were being made both by marketers and refiners. To a lesser extent future business in fuel and burning oils reflected this bearish outlook for the remainder of March.

Cause of Situation

Few anticipated the developments of the past seven days a week or two weeks ago and still fewer are willing to offer any logical explanation of the collapse in the gasoline market. "The reasons for these changes in the attitude of relatively few refiners who are directly responsible for the sudden shifts in gasoline prices have always been a mystery to me," declared one veteran sales manager in commenting on the present market condition. "A slight reaction to the upward price of the past two months was to be expected. But I can see no justification for refiners to become panicky at this time and I am unable to get the viewpoint of those sellers who are now willing to sell gasoline from 1 to 2 cents under the market which prevailed two weeks ago."

This statement probably comes as near summarizing several other views expressed to the writer, as it is possible to obtain. Leading market authorities still declare nothing has developed having to do with fundamental conditions in the Mid-Continent petroleum situation which would point to a permanent collapse in the gasoline market at this time and although many had expected a quiet month in March, few are able to justify even a temporary slump in minor fuel prices when all factors are considered.

In regard to the crude market, attention in the Mid-Continent is centered on tests in the Bazette district of Texas. One refiner went so far as to state during the past week that the weakness in the refined market was largely due to the publicity given the drilling activities in that area. He claimed there was a general impression among the trade that a new large field was certain to be brought in with a resulting weakness in the crude markets. It is expected before the end of this week it will be definitely known whether a new pool will be opened.

A majority of the trade agrees, however, that the weakness in the refined market is not due to a similar condition in the crude situation. The larger companies keep in close touch with conditions in the field and all state that while the independent refiners are not as actively seeking new crude supplies as they were, they have not up to the present time released any of their connections to the major purchasers who buy at the posted price.

The present slump in prices, if it continues, may change this situation somewhat before the end of the month. Refiners dependent on the spot market for the sale of their output cannot break even in their operations and a few at least, will be forced to curtail operations and drop their crude connections if conditions do not change. With no new crude supplies in sight the stronger concerns will not release their crude supplies until it is apparent what the refined market holds for the late spring and summer months.

Buyers Strike

Several close observers of market developments believe the price reductions in gasoline during the past 10 days was the inevitable development of a situation existing in the wholesale and retail markets. Jobbers have not been buying, it is claimed, because the margin between the tank car price in the Mid-Continent refining areas and the Standard of Indiana tank wagon price was too small. The margin between the refiners' and jobbers' prices has been narrow ever since last October. Although the Standard of Indiana tank wagon prices have

(Continued on Page 114)

REFINED MARKET BAROMETER

The continued reactionary price trend centering in the Mid-Continent and Middle West areas featured refined markets during the past week. Markets were generally firm in the West Coast, Gulf Coast and Atlantic Seaboard areas but at interior points, lower prices prevailed in practically all products except lubricants. Unfavorable weather conditions were reported in several areas and this was one important factor in keeping gasoline buyers out of the market. The decline in the gasoline market for the week exceeded 1 cent in some sections. The demand for fuels including distillates was slow in the Middle West forcing lower prices in the Mid-Continent for March delivery. The demand for kerosene was fair but this product was also soft due to the large offerings from refiners. There were no general changes in wax prices.

Mid-Continent—Gasoline prices including natural gasolines and blends from ½ to 1½ cents lower in all areas, due to slow domestic and export demand. Fuel oil and distillate sluggish. Fuel and distillate prices lower in Oklahoma, North Texas and Kansas. Kerosene prices lower in same areas. Lubricants unchanged. Wax firm.

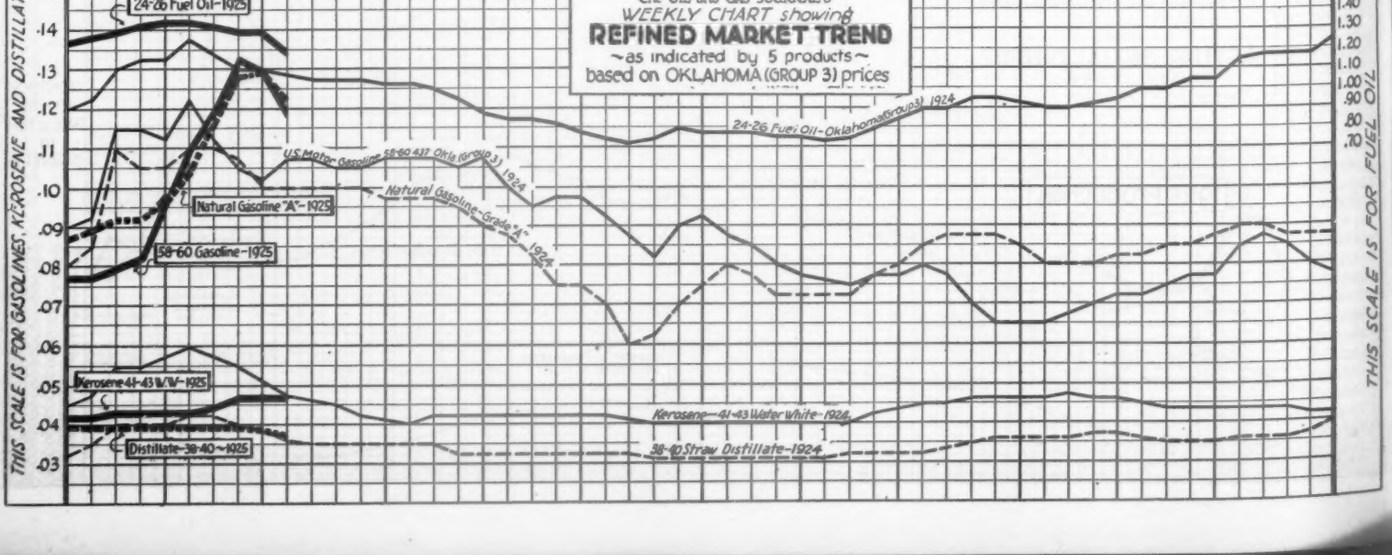
Atlantic Seaboard—Market generally firm. Fair movement of gasolines with no change in price. Kerosene soft. Fuel oil firm. Gas oil quiet. Export movement shows improvement.

Pennsylvania—Market generally weak and prices have been shaded on most products. Refiners unable to maintain recent advances in gasoline. Kerosenes soft. Demand for lubricants not up to expectations.

California—Slight weakness in natural gasolines. Lubs stronger. Fuels and distillates strong. Kerosene dull.

Gulf Coast—Improved demand for summer oils. No price changes.

Chicago—Jobbers staying out of the gasoline market waiting for lower prices. Kerosene sags. Distillates quiet. Fuel and gas oils slow. No change in lubricants.


CENTS PER GAL
JAN. FEB. MARCH APRIL MAY JUNE JULY AUG. SEPT OCT NOV DEC.
DOLLARS PER BBL.
THE OIL AND GAS JOURNAL'S WEEKLY CHART showing
REFINED MARKET TREND
~as indicated by 5 products~
based on OKLAHOMA (GROUP 3) prices
24-26 Fuel Oil-1925
U.S. Motor Gasoline 58-60 437 Okla (Group 3) 1924
Natural Gasoline "A"-1925
Natural Gasoline-Grade "A"-1924
58-60 Gasoline-1925
24-26 Fuel Oil-Oklahoma (Group 3) 1924
Kerosene 41-43 W.W.-1925
Kerosene-41-43 Water White-1924
Distillate-38-40-1925
38-40 Straw Distillate-1924
THIS SCALE IS FOR GASOLINES, KEROSENE AND DISTILLATE
THIS SCALE IS FOR FUEL OIL

Refiners Told Year Is in Their Hands

President Pielsticker in Annual Address Hopes They Will Profit by Mistakes of Past and Heed the Danger Signals of Present

By C. O. Willson

KANSAS CITY, Mo., March 5.—Optimism ruled among the Western refiners who assembled here Tuesday for the three days annual convention of the Western Petroleum Refiners Association. Despite the recent slight slump in refined markets refiners generally are confident the situation is temporary with the outlook for profitable operations over the balance of the year favorable. This attitude on the part of the refiners was apparent whenever the subject was discussed and was stressed in the annual report of F. A. Pielsticker, president of the association.

The reelection of all the officers of the Western Petroleum Refiners Association is apparently assured. A canvas made of the membership indicated a general agreement that the present officers should serve another year due to the successful manner in which the association activities have been handled during the past year. It is known that F. A. Pielsticker, president of the association, has expressed the desire to retire, but every indication pointed to his reelection. The election of Howard Bennette as managing director is assured. Some changes will be made in the board of directors.

The business sessions have been most largely attended in the history of the association, the total registration for the first two days being approximately 350. In addition there are quite a number who have not yet registered.

The group method of handling the business sessions, inaugurated for the first time at this convention, is proving very successful. Over 200 in attendance at the credit and sales managers meeting and approximately the same number of men interested in the technical phases of refining assembled at the plant operators' meetings. The interest taken in the subjects presented was evidenced by the general discussion which followed each address. The plant operators were especially interested in the discussion centering around treating and fractionation.

The business session Wednesday morning was interupted long enough to permit the refiners to listen by radio to the inaugural ceremonies at Washington, including the address of President Coolidge. This very pleasing feature was made possible by the Kansas City Oil Men's Club.

Sectional Sessions

At the credit and sales managers' meeting Tuesday, presided over by George D. Locke, vice president, Barnsdall Refining Co., papers were read by F. L. Miller, vice president, Miller Petroleum Co., on the "Relation of Sales Department to Credit Department," and "The Problem of Credits," by M. D. Creel, Credit Manager, Marland Refining Co.

C. L. Henderson; vice president Vickers Petroleum Co., presided at the technical meeting Wednesday, at which papers were read by Dr. C. K. Francis, consulting engineer, on "Treating," and "Corrosion in a Petroleum Refinery," by Dr. F. W. L. Tydeman, Roxana Petroleum Corp.

The "Development of Distillation and Fractionating Equipment" was dealt with in a paper by W. A. Peters of E. B. Badger's Sons Co., and "Developments in Design and Operation in Topping Plants" by H. W. Camp, general superintendent, Empire Refineries, Inc. "Safety Work in Petroleum Refineries" was the subject of a paper by Ray Miller, safety engineer, Marland Refining Co.

A dinner and smoker given by Kansas City oil and related interests at the Kansas City Athletic Club was the feature of Wednesday evening. Thursday morning's session, with President F. A. Pielsticker presiding, listened to papers by H. L. Shoemaker, assistant chief engineer, Standard Oil Co. of New Jersey, on "Fire Prevention" and by T. T. Gray, Gray Process Corp., on "Refining Cracked Products in the Vapor Phase."

The annual banquet is to be held this evening, with Pat Malloy as toastmaster and addresses by Richard Airey, president Asiatic Petroleum Co., on "The Western Refiner" and by Dr. Marion Nelson Waldrip, Kansas City, on "Cheer in Business."

The papers read by F. L. Miller, Dr. Francis, Dr. Tydeman, Messrs. Peters, and Camp will be found elsewhere in this issue of The Oil and Gas ournal.

Discussion of freight rate cases before the Interstate Commerce Commission, traffic problems and matter of claims for outages in gasoline shipments featured the meeting of the traffic managers' department of the association Tuesday. The conference was presided over by F. N. Davis of the Orient Petroleum Co. of Wichita Falls, Tex., in the absence of D. W. Moffitt, vice president of Cosden & Co., who was scheduled as chairman.

President Pielsticker's Report

The Western Petroleum Refiners' Association has had its adversities the past year, the same as has the industry. We have survived, however, and have benefited by industrial adversity, as we believe has the entire oil industry. It is almost axiomatic that one division of the industry cannot long prosper at the expense of another, yet the refining industry is, or at least should be, a scientific manufacturing industry, and, if properly handled and with its production properly regulated, should always prosper, regardless of adverse conditions existing in other branches of the industry.

A year ago, the statistical department was engaged in work which we believed to be the most instructive this association could do. The information it was gathering and disseminating among the membership was very important and of almost untold benefit. The history of this need not be rehearsed. You were informed at the time why we discontinued gathering and disseminating stock statistics. We regretted to do this, since we were at the time we discontinued the work only beginning to function as we wanted to. We hoped then that in a very short time we would be able to give almost 100 per cent information to our membership. We are not now arguing as to whether we were legally right or wrong in this activity, though our personal opinion is that we were at least morally right, and also probably legally right, official legal opinions to the contrary notwithstanding.

Governmental Interference

The Department of Justice's opinion in holding that this service was illegal attempted to support the opinion with the argument that, if the refiners were enabled to secure figures on production in stocks, they would manufacture only a sufficient quantity of gasoline to meet the requirements of the public, and the price received for the product under such circumstances would be greater than the price at which the public would be enabled to purchase the product if the refiner, operating ignorant of conditions, greatly overproduced. The attitude of the Department of Justice on overproduction, as mentioned above, and the attitude of the President, as expressed by him in the appointment of the Federal Oil Conservation Board, would probably be amusing if the situation were not so serious.

Overproduction is viewed, as it should be, with alarm by the executive department, whereas, the Department of Justice looks upon it as a benefit.

Due to the restrictions placed upon us in gathering and disseminating our own figures we were reduced to making interpretions of figures supplied by the Government 45 to 60 days late. This we have attempted to do in the establishment of our weekly printed bulletin service. We have hopes of improving this service to the extent of making it equally valuable to that previously rendered.

The general activities of the association under the control of Mr. Bennette, have extended over almost every activity of the oil industry. A great deal of our time, however, especially in recent months, has been taken up with Legislative matters. Quite a number of Legislatures convened, and proposed much ill-advised legislation adversely affecting the industry. We feel constrained to say that the movements initiated in several of the States, jroviding for the State to engage in the business of selling gasoline to the public, is a growing menace to our business and emphasizes the necessity of close cooperation and a good strong organization.

Gasoline tax proposals have assumed serious proportions. If all gasoline tax proposals under consideration by the various States were written into law, it would impose a burden upon the motorists amounting to about $200,000,000, based upon 1924 consumption. This amount would have been sufficient to have paid 6 per cent interest on our national debt at the close of the year 1915.

Work of Committees

Our technical or manufacturer's committee, under the chairmanship of Mr. Henderson, has done notably good work, mostly concerned with three items: Coefficiency of expansion tables. Household burner problems, and the so-called cotton on the bulb problem—the rule of the Federal Specification Board requiring the removal of the cotton from the thermometer bulb in making distillation tests, which has, in our opinion and we believe in that of the entire committee, worked a great harm on the industry. It is our information that the enforcement of this rule affects the gasothe yield from 1½ to 2 per cent, which meant a reduction in gasoline yields in Oklahoma and Kansas alone of approximately 30,000,000 gallons during 1924. In view of this, the importance of adjusting the end point to meet this ruling may be readily appreciated. The Federal Specification Board meets April 4 and our committee will present an application to raise the end point so as to meet the deficiency brough about by the change in method of testing. Our Government will then be afforded a wonderful opportunity for putting into effect a part of its Conservation program by granting the request.

The inland refiner is handicapped in

(Continued on Page 117)

OHIO PETROLEUM MARKETERS MEET; VIGOROUSLY OPPOSE GASOLINE TAX

COLUMBUS, Ohio, Feb. 28.—Strenuously objecting to the gasoline tax proposed in the Ohio Legislature now in session, the Ohio Petroleum Marketers' Association, meeting today and yesterday, passed a resolution condemning the tax.

This was the fourth annual convention of the association, organized in 1922 among the oil marketers of Ohio, a two days session.

R. E. Gerkins of the Gerkins Oil Co. of Dayton, Ohio, in addressing the convention on the subject, said:

"It seems as if the Legislators were going to exercise their license of digging into the people's pocket to create some new jobs and help keep themselves in power longer. The Federal Government has seen the light and has reduced taxation, but to what avail if the State Governments are to be allowed to continue taking what the Federal Government gives us by reduction?

"We must fight the bill not only because it affects our industry but also because it sets a dangerous precedent in Ohio that will lead the legislators to tax other industries as well."

Tax collection would be too costly to be borne, if the new law was passed, Mr. Gerkins said.

"Collection would cost the motorist one-half cent more a gallon, making a total of 2½ cents a gallon. Such small per cent of this would get to the roads they could not be well maintained. Farmers have been won over partially by the propaganda of the cement and building material men. It is up to us to make some concerted effort to defeat the bill."

Hope that the bill might meet defeat at the hands of the Governor even if the Legislature did pass it was held out by Mr. Gerkins, who called for general discussion. John L. Marsh of the Vahey Oil Co. of Youngstown, declared that the manner of taxation of the State Government was enough to make a man turn bolshevistic. It was after Mr. Marsh's remarks that a committee was appointed to draft the resolution, with Mr. Marsh, as chairman; E. E. Bessire, of the Radiant Oil Co. of Lima, assisting.

James A. Gilmore, field secretary of the Michigan Independent Oil Men's Association spoke of price cutting and discriminatory methods of salesmanship. "No one can name a firm which has made solid financial success by price-cutting or discrimination. It just can't be done. Those who attempt such methods eliminate themselves from the business."

Election of officers was held at the first session. George J. Karb, former mayor of Columbus and president of the Central Ohio Oil Co., was reelected president; William F. Burke of the Kentucky Independent Oil Co., and head of the Cincinnati Oil Men's Club, first vice president; R. R. Hart of the Knox Oil Co. of Mount Vernon, second vice president; Dan Sullivan of the Dependable Oil Co. of Marion, third vice president; C. A. Laubach of the Columbus Oil Co., secretary, and C. A. Lucas of the Paragon Oil Refining Co. of Toledo, treasurer.

Three-year members of the board of directors chosen were Henry Seimer of Cincinnati, Charles Freck of Eaton and R. Goodwin of Toledo.

In the absence of President Karb, in Florida, Vice President Burke presided. On Thursday, 111 had registered, and on Friday, 15 more.

W. C. Hughes, new field secretary of the Ohio association was installed at this convention. He has been on duty since February 15. His office, newly established, will be at 532 E. Broad St. Next year the convention will be held in Cincinnati.

With the Western Petroleum Refiners

W.E. O'Meilia, of Westcott & Greis (left) and F.G. Palmer, pres. of Kow Boiler Works

Looking east on 12th St.

Left to right: J.T. Berry, Home Oil; L.C. Hickox, Diamond Ref.; R.A. Osterlag, of Janssen-Osterlag Mfg.; W.A. Knapp, Butler, Mfg.

H.E. Widdell of Cross-Widdell Engr. Co.

Fred Warner, Continental

W.B. Hamilton, Texhoma O&R (left); N.H. Martin, Texhoma; Walter Miller, Marland

Dr. C.K. Francis

A.F. Wood Chestnut & Smith

"Left to right": C.A. Keller, Derby; F.H. Emig, N.P.M.A.; E.C. Claiborne, Derby; W.E. Perdew, Derby; Geo. D. Locke, Barnsdall; John L. Gray, Shaffer; B.L. Majenski, Shaffer; W.E. Moody, Shaffer; & N.L. Shoemaker, S.O. of N.J.

John E. Galvin (left) and W.J. Hayes of Ohio Steel Foundry

at the Kansas City Convention

L.A. Greene Radio Pet. Co. (left) L.M. Lingenfelter Petroleum Marketing Co. (right)

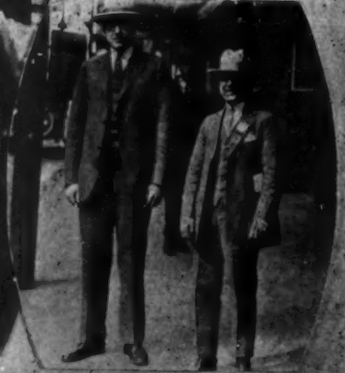
Above, left to right: F.A. Pielsticker, George Locke, W.R. Boyd, Jr., Fayette B. Dow, J.H. Nutter, G.G. Woodruff, Howard Bennette, E.W. Goebel

C.H. Laessig (right) pres. Automobile Gasoline Co., St. Louis, had first drive-in filling station in U.S.; — with E.S. Line, Kanotex.

E.P. Fritz, Atlantic — H.P. Dunn, Advanced Pet. — A.A. Garrabrant, Atlantic

Above — left to right:
J.M. Carson — Cosden Sales Corp.
J.L. Walsh — Continental
T.F. Thompson — Northland, Chicago
F.L. Dunn — Tidal
T.P. Collins — Industrial Pet. Corp.
Stanley G. Freck — Foamite-Childs

A group of refiners in front of the Muehlebach



C.W. Rice — Vickers Pet. F.W.L. Tydeman — Roxana
Dr. J.C. Morrel — Universal Oil Products Frank E. Spencer — Spencer Pet. G.A. Burns — Roxana Geo. C. Goller — Lubrite

Congratulated by Conservation Board

Wealth of Information in "The Oil Industry's Answer" Has Already Proved of Much Value, Says Commission

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Secretary of the Interior, Chairman
HON. JOHN W. WEEKS
Secretary of War
HON. CURTIS D. WILBUR
Secretary of the Navy
HON. HERBERT HOOVER
Secretary of Commerce

E. S. ROCHESTER, Secretary

FEDERAL OIL CONSERVATION BOARD
INTERIOR DEPARTMENT BUILDING
WASHINGTON February 25, 1925.

Mr. Frank T. Lauinger,
President, Petroleum Publishing Co.,
Tulsa, Oklahoma.

My dear Mr. Lauinger:

On behalf of the board, please permit me to thank you most sincerely for your courtesy in supplying, through Mr. Kern here, copies of the volume printed under your direction and entitled "The Oil Industry's Answer". This volume contains such a wealth of information that it has already proved of much value to the board in its consideration of the many problems involved in its inquiry into petroleum conditions.

You are to be congratulated upon the thoroughness with which the volume was prepared.

Sincerely yours,

E. S. Rochester

Secretary.

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Members of the Federal Oil Conservation Board. Left to right—John W. Weeks, Curtis D. Wilbur, Chairman Hubert Work, Herbert Hoover and Secretary E. S. Rochester.

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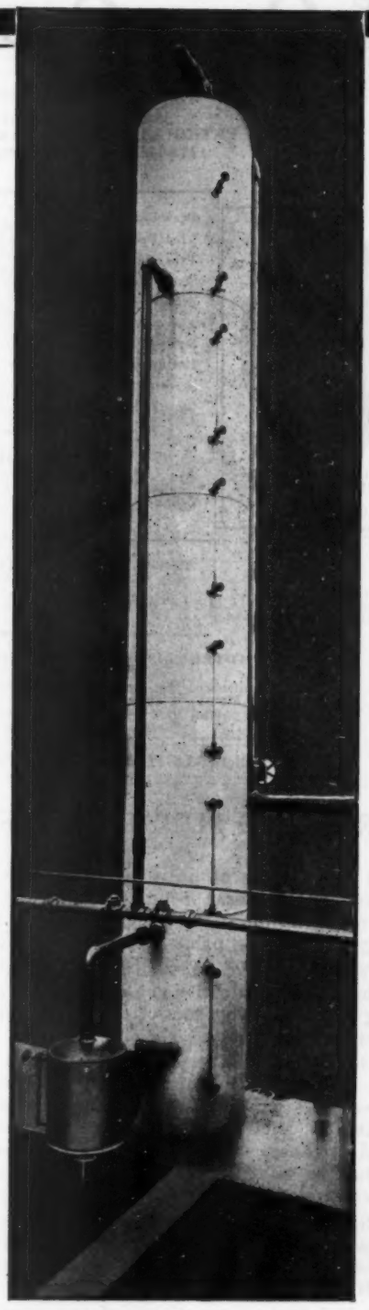

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RISKING SUBSTANCE FOR SHADOW

It is a sample of political perversity that United States Senators and the Federal Trade Commission should be renewing the gasoline agitation at the very time when refiners are having a hard time getting living prices for their product.

Producers have been suffering for three years from an overproduction of crude they could not help. Refiners have been suffering from an overproduction of gasoline that should have been prevented.

The whole industry pays tribute to the efficiency of the refiners. They have worked modern miracles. They know their business. It would be superfluous to attempt to offer advice or criticism on their conduct of their technical operations. But, absorbed in these, some may have overlooked basic economic principles just as vital to business success, principles applicable to any business and upon which alone prosperity can be built.

Right now the outlook, considered strictly from the refiner's standpoint, is none too promising. His immediate markets are reactionary and his profits threatened if the situation is not quickly remedied.

It is largely a repetition of the refinery activities during 1923 and 1924. After a summer of reducing inventories at a loss the refiner was able last fall to show a small profit through advancing refined prices and low crude.

Although the season of maximum consumption was at an end refineries increased their runs to stills, as clearly indicated at the time by the reports of The Oil and Gas Journal, confirmed later by Government figures.

The refiners were misled by a strong demand for fuel oils. In some cases they obtained as much from the residuum as they paid for the crude. They ran all the crude they could find, paying premiums to take it from the large buyers and from each other.

The refiner thus forced advances in the crude market and, to offset this, endeavored to advance gasoline. He found he had produced too much fuel oil which is now lower than before the crude advance in some areas. At the same time he produced more gasoline than the consuming markets could absorb, an error that would have been avoided by the realization that gasoline is the main product and to base operations on a by-product like fuel oil was courting disaster.

However skillful and efficient a manufacturing industry may be it must be ruled in its operations by the law of supply and demand or suffer the consequences.

Many outsiders, and not a few inside the industry look upon the oil business as a gamble. The hazards of production, both in the finding and the price when found, make it often the sport of circumstance, but the manufacturing of the raw material into refined products is like any other manufacturing—a plain business.

If all refiners understood this and acted upon it, as the more successful do, there would be no more "distress" gasoline breaking the market below the cost of production and plunging the refining industry into one depression after another.

Overproduction of crude, unforseeable and unpreventable while the industry is denied the power to deal with it, may happen at any time. Overproduction of crude comes by chance; overproduction of refined products can come only through design.

No matter how much crude is produced there is no corresponding increase in demand for refined oils. Refinery operations should be based, not on the supply of crude but on the consumption of finished products. That is so simple a proposition it would be absurd to state it were it not that overproduction of gasoline has seemed so often regardless of all calculations of possible demand.

The stocks of refined oils are known. Experience has established that the demand for any year can be calculated within a stated per cent. The statistical record is clear and the effects familiar.

The manufacturer who conducts his operations as a business and not as a gamble will make his plans accordingly. He will figure how much business there is to be obtained and arrange for a proportionate output. He will not allow himself to be stampeded by temporarily cheap raw material into manufacturing more than he can hope to dispose of.

If he should permit himself to be deceived and his fellows should be of the same mind, all breaking their backs to turn out products regardless of the possible market, the result would be exactly the same as the refining industry has experienced in the past two years—"distress" products crashing down prices everywhere and profits vanished.

The Western Petroleum Refiners' Association has done excellent work in directing the attention of the industry to this danger which President F. A. Pielsticker has again emphasized in his address at the Kansas City meeting.

The costly lesson of 1923 was not without some effect on the operations of Oklahoma and Kansas refineries. The stocks of gasoline at these refineries since November, 1923, have been less each month than for the corresponding month, up to October, 1924.

But with the brightening outlook in December there was a tendency to increase operations in some quarters, a trend that was intensified in January and February. Export purchases may have contributed but it must be remembered that until foreign consumption is very much more general it can be only a comparatively minor factor in the demand upon Mid-Continent refineries. Over a year the domestic market dominates and that demand can be fairly closely calculated. Operations based on such calculations will keep output within selling range at a fair profit.

To overstep that boundary may be to risk the substance for the shadow.

With just so much assured demand it is unwise to chance overproduction that may recoil in "distress" products and rob the industry of its legitimate expectations.

It is immaterial, except in degree of danger, whether the industry overproduces at the rate of 5, 10, 20 or 40 per cent. The suicidal effect is the same, the adding to unneeded stocks with the peril of tumbling prices below the point of fair profit or even of costs.

The refiners of petroleum have a record of achievement unmatched in American industry but in their eagerness to meet the demand put upon them they have not always been mindful of their own self-preservation. In the stress of enlarging output from proportionately less raw material some have at times overshot the mark to the hurt of all, making necessary the reminder that, after all, the manufacturing end of the oil industry is just a business, like any other, with a limited market that calls for a definite output.

There is no ground to fear that the refining industry with its modern equipment and potentialities will not be able, for many years, to supply whatever consumption asks, nor that it will be unable to supply the public at reasonable prices with a fair profit. But to do this it will have to keep its eyes on the limits of consumption.

The position today, by reason of disregard of this fundamental factor in manufacturing, is disappointing but not irremediable. The application of sound business principles to the program of operation can yet save the situation.

The automobile industry made the same error last winter, speeding production beyond reasonable hope of demand through overoptimism. This winter the motor manufacturers have returned to the sane policy of basing output on normal consumption and have every reason to expect a prosperous year. The petroleum refiners can do the same. It is not yet too late.

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Gasoline Agitation at Washington

Department of Justice Reminds That President's Conservation Board Is Making a Thorough Study of the Oil Industry

By Charles E. Kern

WASHINGTON, D. C., March 2.—The Federal Trade Commission in its report to the President a year ago recommended prosecution by the Department of Justice of the Standard Oil companies of New Jersey, California, Kentucky and Indiana for violation of the the Standard Oil dissolution decree. This was shown by the report of the commission just sent to the Senate in response to a resolution introduced by Senator Trammell of Florida asking for the report hitherto held secret "if not incomptable with the public interest."

Besides proposing an investigation by the Department of Justice of the result of the Standard Oil decree and of the present organization and activities of members of the group, the commission recommended:

Trade Commission's Ideas

Application of the commodities clause of the commerce act to pipe lines as well as to railroads to prevent pipe line companies holding connections with a company shipping oil.

Lower pipe line rates and reduction of minimum shipment requirements to relieve small shippers.

Prohibition by Federal legislation of common stock ownership in corporations which have been members of a combination dissolved under the Sherman law.

Consideration by Congress of some restriction upon exportation of crude oil and its products in view of the rapid depletion of domestic resources.

Study of existing "wasteful" methods of drilling.

Legislation for collecting and reporting facts of the industry.

Establishment of consumers cooperative gasoline supply organizations to "save part of the wide margins frequently prevailing between independent refineries and service station prices and thereby also to encourage competition."

While companies which were members of the former combination now operate "less consistently as a group," the commission's report said, some of the more important members "are fortifying themselves by acquiring control of independents and entering new branches of the industry as integrated and dominant units in the territories in which they operate."

The report states that the Standard Oil Co. of Indiana with the Prairie Pipe Line Co. dominates "in a substantial degree" the price of crude oil and gasoline in the Mid-Continent area. The report says independents keep in touch with these two companies and oppose through their various associations any effort to cut prices.

The fact this report and recommendation has never been acted upon by the Department of Justice is accepted here as strong evidence that the Government attorneys did not consider the evidence offered by the commission as establishing their case.

Congressional Activity

The activities of Congress bearing upon the oil industry during the present session have been directed almost exclusively toward an investigation into the price of gasoline which followed the recent increase in the price of crude oil. This activity was started by Representative Zihlman, of Maryland, who under authorization of the District of Columbia Committee started to investigate the price of gasoline in the District of Columbia. One of the first acts of this committee was to send for Chief Technologist Tough of the Bureau of Mines for statistics of prduction and consumption of petroleum. Mr. Tough told the committee the price of gasoline had merely followed the price of crude oil and in his opinion it was entirely justified. The committee at once decided that was not the kind of information it was looking after and turned to the Federal Trade Commission for information.

Mr. Zihlman then introduced a resolution providing for the appointment of a committee of seven members of the House to conduct an investigation into the causes for the increase in the price of gasoline and Representative McDuffie, of Alabama, followed with another resolution directing the Federal Trade Commission to make this investigation.

The spirit of investigation had already spread to the Senate where Senator Trammell, of Florida, offered a resolution for an investigation by the Federal Trade Commission. At the same time, Mr. Trammell offered a resolution directing the Federal Trade Commission to transmit to the Senate a copy of its report on its investigation in 1923 and 1924 of the price of crude oil, gasoline and other petroleum products and other data pertaining to the operations of oil companies and refineries. He pressed for a vote on his resolution which was passed after it had been amended to provide that the commission should send it "if not incompatible with the public interest." After considerable discussion as to the propriety of allowing the Federal Trade Commission to determine whether the giving of this information is incompatible with the interest the resolution was adopted.

The investigation of 1923 and 1924 by the Federal Trade Commission was made upon request of the President of the United States and the report was made solely to the President, who, it is understood, forwarded it to the Department of Justice, as an assistance in the investigation of that department to determine the propriety of beginning a prosecution if any violation of law were found.

Senator Harreld, of Oklahoma, in the debate on the floor of the Senate read a letter he had received from Acting Attorney General Seymour in reference to the attitude of the department on these investigations. This letter follows:

"I have the honor to comply with your request for information concerning recent investigations by the Department of Justice concerning conditions in the oil industry, for consideration in connection with Senate resolution 337, directing an investigation by the Federal Trade Commission relative to recent increases in the price of gasoline and as to the existence of monopolies or combinations in restraint of trade among the producers and wholesalers of gasoline.

"In the spring of 1923, the department began an investigation of conditions in the industry, following the receipt of complaints to the effect that the price of gasoline was being fixed by agreement. The inquiry soon developed that there was no control of the industry by the so-called independent producers and refiners. Later the department broadened the scope of its investigation to include a careful record examination of the several companies of the Standard group to ascertain whether there had been any violation of the dissolution decree. The department promptly investigated all complaints which might give rise to evidence tending to show a violation of the decree.

"This investigation disclosed that the Standard Oil Co. of Indiana, the Standard Oil Co. of New Jersey, The Texas Co. and the Gasoline Products Co. had interchanged licenses based on patents for 'cracking' gasoline containing numerous conditions and covenants in restraint of trade and commerce in gasoline. A suit in equity was filed against these companies and their licenses charging that the agreements are violative of the anti-trust act. A copy of the bill of complaint in this case is herewith handed you. Answers have been filed and application will shortly be made to the court to appoint an examiner to take testimony in various parts of the country.

Found No Evidence

"During the summer of 1924 the department made an investigation of certain trade associations in the oil industry. This investigation did not disclose evidence warranting the institution of proceedings, although one association voluntarily abandoned the statistical service maintained by it during the inquiry.

"In the course of these investigations the Department of Justice cooperated with and had the advice and assistance of the attorneys general of the several States. A conference was held with a special committee of the Association of Attorneys General of the States at which much useful information was exchanged. During the year 1924, partly as a result of such cooperation, the attorneys general of the States of Missouri and Nebraska, respectively, instituted suits in these States against the Standard and certain independent interests operating therein.

"I would remind you that on December 19, 1924, the President appointed a Federal Oil Conservation Board, consisting of the Secretary of War, the Secretary of the Navy, the Secretary of the Interior, and the Secretary of Commerce, to formulate a policy for conserving the national oil and gas resources. It is my understanding that, as a part of its work of preparation, the board will make a detailed study of the oil industry in all of its branches. Yours very truly, A. T. Seymour."

Senator Harreld has announced his intention of opposing all resolutions for an investigation of the oil industry unless some probable cause for the investigation is shown, such as a widening in the difference between the prce of crude oil and the price of gasoline or other products of crude oil. He takes the view that repeated investigations of the industry only tend to confusion and useless expenditure of money and inconvenience to a large body of business men. In any civil case, a probable cause of action must be shown in order to institute a proceeding and he sees no reason why the same rule should not apply when it is sought to place the oil industry upon the defensive by means of a congressional investigation.

Oil Board Hearings

The President's oil board will not begin the taking of oral testimony until a sufficient number of replies to questionnaires have been received upon which to base a complete examination into the essential features of the oil industry under investigation. Hundreds of these questionnaires have been sent out and replies are coming in regularly. Oral testimony may be taken in March, but the board may not be ready for that until later. Probably not more than one dozen of the outstanding leaders in the oil industry will be called upon to give real testimony.

Indian Leasing Bill

The Senate has passed Senate Bill 872, being the administration's measure to authorize the Secretary of the Interior to suspend or restrict the sale of leases on Indian lands whenever in his judgment such production is not necessary. This measure is looked upon as embodying a policy that is sure to be included in the report of the President's oil commission now making an investigation into the conditions controlling the conservation of oil. At this time the law makes it mandatory upon the secretary to lease 100,000 acres of Osage oil land every year regardless of conditions of oil production or the market. This bill has now gone to the House of Representatives where it has been referred to the committee on Indian affairs. That committee has no other bill embodying this question before it and it is conceded that no action will be taken on this measure at this session of Congress either by the House or the committee.

LARGEST ANNUAL GASOLINE OUTPUT; GAIN OF 18.25 PER CENT IN 1924

WASHINGTON, D. C., Feb. 28.—The production of gasoline in the United States during 1924 amounted to 8,959,680,220 gallons, the largest annual output in history, states the Department of the Interior in reviewing statistics compiled by the Bureau of Mines. This exceeds by 1,403,735,077 gallons the previous high-record mark in 1923. The daily average production of gasoline during 1924 amounted to 24,480,001 gallons, an increase in daily average production of 3,778,781 gallons, or 18.25 per cent.

Imports of gasoline during 1924 amounted to 145,022,774 gallons, a decrease from 1923 of 46,290,766 gallons, or 24.20 per cent. Exports were 1,219,474,374 gallons, an increase of 348,357,760 gallons, or 28.57 per cent.

While gasoline production was establishing a new record, the millions of operators of automobiles, tractors, motor boats, airplanes and internal combustion engines of various types were also setting a new high record mark for the consumption of gasoline. Domestic demand for gasoline in 1924 is reported as 7,780,625,085 gallons, exceeding the former high record make in 1923 by 1,095,589,805 gallons. The daily average domestic demand in 1924 amounted to 21,258,538 gallons, an increase in daily average consumption over 1923 of 2,943,373 gallons, or 16.07 per cent. In 1924 domestic demand comprised 86.84 per cent of production compared to 88.47 per cent in 1923.

Stocks of gasoline on hand the first and last of 1924 were 1,074,899,650 and 1,179,503,185 gallons respectively, an increase of 104,603,535 gallons, or 9.73 per cent.

The production of kerosene during 1924 was 2,521,108,564 gallons, a daily average of 6,888,275 gallons. This represents an increase in daily average production over 1923 of 452,837 gallons, or 7.04 per cent.

Exports of kerosene amounted to 919,478,743 gallons, an increase over 1923 of 64,923,792 gallons, or 7.60 per cent. Domestic demand for the year was 1,549,357,253 gallons, a daily average of 4,233,217 gallons. This represents an increase in daily average consumption of 144,078 gallons, or 3.52 per cent. Stocks on hand at the first and last of the year were 283,195,667 and 338,825,779 gallons, respectively.

The production of gas and fuel oils during 1924 was 13,459,968,845 gallons, a daily average of 36,775,871 gallons, an increase in daily average production over 1923 of 3,695,894 gallons, or 11.17 per cent. Imports and exports were 542,927,-

(Continued on Page 118)

Late News From the Fields

Bazette Tests Look Like Failures to Onlooking Majority

KERENS, Tex., March 3.—The result of the two Bazette tests, the Atlantic Oil Producing Co., Penn and others' on the Alshur farm, and the Humphreys Boyd Oil Co. on the Waltham farm, is not yet known, but at this writing neither looks like a prospective oil well, and the world may have to wait for other tests before it is proved whether or not Bazette is oil country.

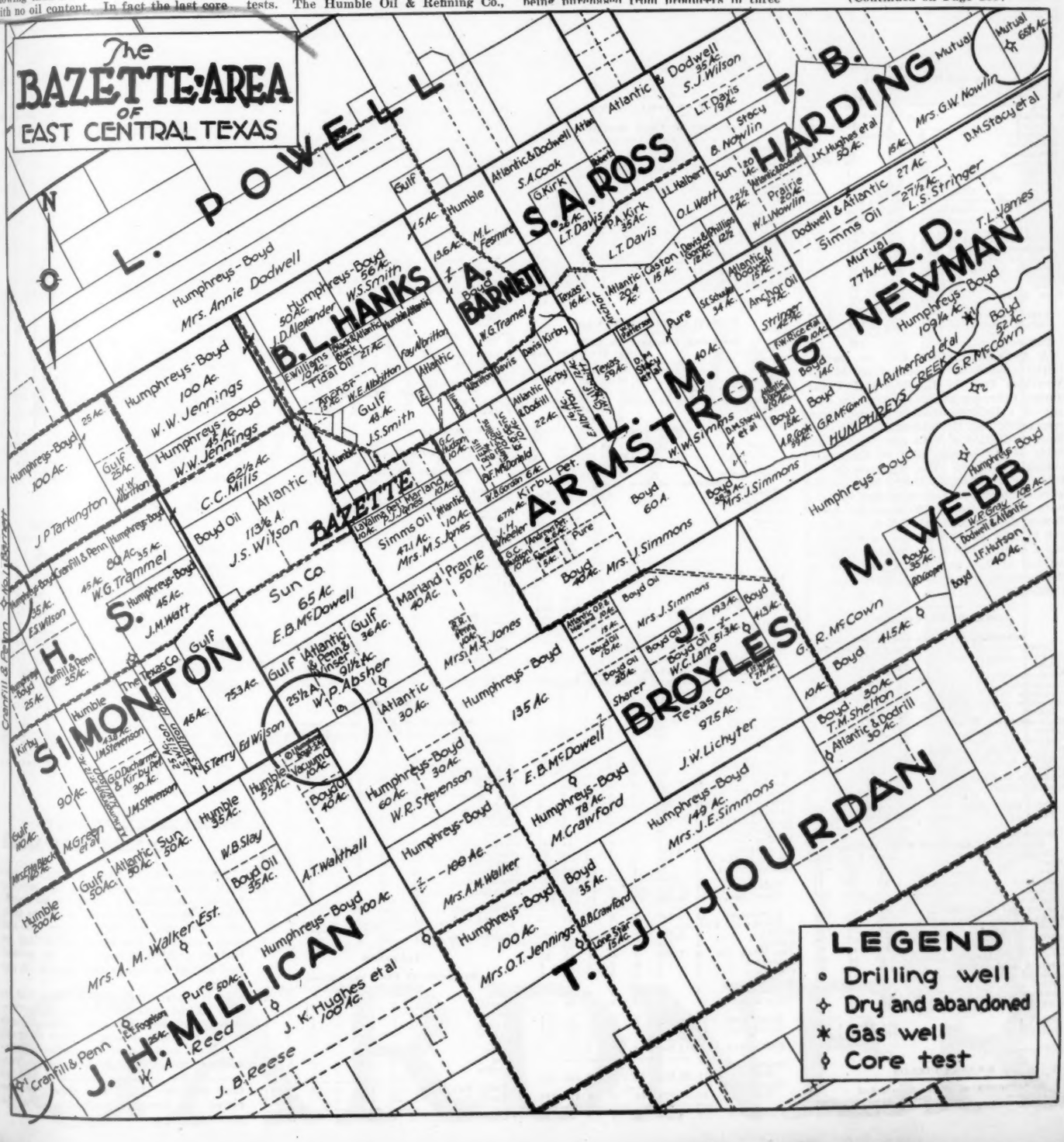
The Atlantic & Penn test has been coring at 3,058 feet with nothing better showing than a mixture of sand and lime with no oil content. In fact the last core had the appearance of having come from a salt water sand.

The Humphreys Boyd Co.'s test had swung the casing at 3,011 feet after having drilled to 3,014 feet. The casing was cemented and later the plug was drilled out and preparations for standardizing were started.

The feeling most prevalent among oil men here—and there are many of them, anxiously watching—is that both tests will be failures.

The map of the Bazette area shows five deep dry holes not far from the present tests and a number of core tests, the result of which was never made public. A glance at the map shows that nearly all the big companies operating in the Mid-Continent Field have acreage near the tests. The Humble Oil & Refining Co., Gulf Production Co., Atlantic Oil Producing Co., Sun Oil Co., Vacuum Oil Co., Prairie Oil & Gas Co., Sinclair Oil & Gas Co., Marland Oil Co., Simms Oil Co., Pure Oil Co., Mutual Oil Co., Kirby Petroleum Co., Cranfill & Penn, The Texas Co., J. K. Hughes and others, are all represented as owners of small parcels scattered about the field close to the two tests. The Humphreys Boyd Oil Co.'s test is on a 5-acre lease and the Atlantic-Penn test on a 31½-acre piece of the Abshur farm. The farms are mostly of small size and there are many corners and strips, all of which have been leased by oil companies or individuals. Some of the acreage bought recently brought high prices.

Most of the companies owning close-in acreage are themselves purchasers of oil on the open market. A big field in Bazette would give them at a nominal cost a supply of crude that just now is being purchased from producers in three States at a market price that permits the producer to make a profit. The fear that a new big field, with such an ownership as represented in Bazette, might have a depressing influence on the general Mid-Continent crude situation turned many anxious eyes on that territory for several days past.



(Continued on Page 105)

NORTH CENTRAL TEXAS

FORT WORTH, Tex., March 3.—A total of 129 new locations were made in North Central Texas during the past week, an intensive development campaign not seen since the exciting days of Ranger and Burkburnett. Archer County led in new locations with 43, mostly in the south part of the county. Young County came second with 18 new locations, mostly in the northern part of the district, so the South Archer-North Young Pool, which is the most active

Big Drop in Output Is Due to Wortham

Initial Production of Wells Completed East of California During February 193,292 Barrels Less Than January

SUMMARY OF ALL FIELDS

Field—	Comp.	Prod.	Dry	Gas
Eastern	269	1,010	32	67
Lima	26	296	7	0
Central Ohio	39	5	9	29
Indiana	7	70	3	0
Kentucky	126	1,406	35	7
Tennessee	5	325	3	0
Illinois	8	140	4	0
Kansas	96	10,402	25	8
Oklahoma	323	80,541	108	39
North Central Texas	207	18,710	87	3
East Central Texas	167	58,503	41	2
Gulf Coast	82	17,615	29	2
Southwest Texas	17	8,800	1	2
Louisiana-Arkansas	93	9,026	13	10
Wyoming	23	1,984	3	3
Montana	9	1,655	4	0
Colorado	2	200	1	0
Utah	1	0	0	1
New Mexico	3	1,175	0	0
Total February	1,503	211,863	405	173
Total January	1,339	405,155	155	166
Difference	164	193,292	250	7

Rigs and Wells Drilling

Field—	Rigs.	Drg.	Ttl.
Eastern	168	364	532
Lima	5	40	45
Central Ohio	37	56	93
Indiana	1	11	12
Kentucky	14	242	256
Tennessee	6	9	15
Mississippi	6	20	26
Alabama	1	9	10
Georgia	1	4	5
Illinois	2	19	21
Kansas	97	352	449
Oklahoma	284	1,006	1,290
North Central Texas	90	238	328
East Central Texas	17	120	137
Gulf Coast	43	155	198
Southwest Texas	30	86	116
Louisiana-Arkansas	107	260	367
Wyoming	91	248	339
Montana	20	115	135
Colorado	11	81	92
Utah	1	23	24
New Mexico	4	35	39
Total February	1,036	3,493	4,529
Totals January	961	3,669	4,630
Difference	75	176	101

A decline of 221,039 bbls. in the initial production of completions in the Wortham Pool in East Central Texas during February as compared to the output of wells completed in January was responsible for the substantial drop in flush production of wells completed in all fields of the country east of California during February. The decrease in all fields totaled 193,292 bbls. More wells were completed in February than in January but there were 250 more dry holes during the latter month. New work began to show an increase late in February but a drop of 121 in the number of wells drilling at Wortham had a big effect in the total for the entire country east of California.

OKLAHOMA FIELDS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Osage	31	2,419	12	0
Tulsa	15	270	1	2
Washington	8	0	5	3
Okmulgee	24	4,720	7	0
Seminole	37	17,886	2	1
Okfuskee, Hughes and McIntosh	38	21,207	7	2
Muskogee and Wagoner	15	30	8	6
Creek	36	3,176	14	7
Pawnee	12	2,735	2	3
Payne, Lincoln and Kay	18	10,873	8	4
Garfield and Noble	21	15,778	6	0
Carter	15	1,180	1	0
Stephens and Cotton	14	227	7	3
Miscellaneous	39	40	28	9
Total Feb.	323	80,541	108	39
Total Jan.	236	64,657	73	27
Difference	87	15,884	35	12

Summary of Rigs and Wells Drilling

County—	Rigs	Drg.	Ttl.
Osage	38	82	120
Tulsa	7	16	23
Okmulgee	26	48	74
Seminole	39	119	158
Okfuskee	19	80	99
Hughes and McIntosh	21	84	105
Muskogee and Wagoner	7	28	35
Creek	30	98	128
Pawnee	12	67	79
Kay	30	61	91
Payne and Lincoln	9	55	64
Garfield and Noble	9	55	64
Stephens and Cotton	5	44	49
Carter	19	50	69
Pontotoc	0	19	19
Miscellaneous	13	100	113
Total Feb.	284	1,006	1,290
Total Jan.	249	1,008	1,257
Difference	35	2	33

KANSAS FIELDS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Anderson	16	534	2	1
Butler	3	85	0	0
Elk and Chautauqua	7	95	2	2
Cowley	22	6,556	3	0
Greenwood	30	2,870	8	1
Miscellaneous	18	262	10	4
Total Feb.	96	10,402	25	8
Total Jan.	65	7,362	31	8
Difference	31	3,040	6	0

Summary of Rigs and Wells Drilling

County—	Rigs	Drg.	Ttl.
Butler	6	23	29
Chautauqua and Elk	6	27	33
Cowley	20	83	103
Greenwood	41	41	82
Montgomery	0	33	33
Russell	3	11	14
Sumner	2	18	20
Wilson	0	10	10
Woodson	2	10	12
Miscellaneous	17	96	113
Total Feb.	97	352	449
Total Jan.	78	360	438
Difference	19	8	11

EAST CENTRAL TEXAS

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Wortham F'ld (Limestone & Freestone)	153	58,503	27	2	5	71	76
Navarro Co.	0	0	0	0	6	19	25
Bowie Co.	3	0	3	0	0	2	2
Delta Co.	1	0	1	0	0	0	0
Franklin Co.	1	0	1	0	0	1	1
Henderson Co.	1	0	1	0	0	1	1
Hopkins Co.	2	0	2	0	1	1	2
Hunt Co.	3	0	3	0	1	1	2
Kaufman Co.	2	0	2	0	0	0	0
Miscellaneous	0	0	0	0	4	25	29
Total Feb.	167	58,503	41	2	17	120	137
Total Feb.	130	279,542	19	1	27	251	278
Difference	37	221,039	22	1	10	131	141

NORTH CENTRAL TEXAS

Including February 19, 1925

District—	Comp.	Prod.	Dry	Gas
Wichita County	27	695	11	0
Archer	99	12,450	32	0
Young	28	1,555	18	0
Stephens	10	635	4	1
Eastland	12	580	3	0
Wilbarger	8	1,350	1	0
Reagan	2	1,400	1	0
Wildcats	31	45	17	2
Total Feb.	207	18,710	87	3
Total Jan.	193	18,072	68	6
Difference	14	638	19	3

Summary of New Work

District—	Rigs	Drg.	Ttl.
Wichita County	10	4	14
Archer	16	65	81
Young	14	25	39
Stephens	11	23	34
Eastland	3	13	16
Wilbarger	6	43	49
Reagan	12	7	19
Brown	4	4	8
Wildcats	14	54	68
Total Feb.	90	238	328
Total Jan.	80	289	369
Difference	10	51	41

GULF COAST

Summary of Field Operations

District—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Batson	3	90	1	0	1	4	5
Blue Ridge	1	125	0	0	2	2	4
Big Creek	0	0	0	0	2	4	6
Barber Hill	1	0	1	0	0	1	1
Edgerly (La.)	2	250	1	0	0	1	1
Goose Creek	7	490	3	1	3	13	16
Humble	1	0	1	0	1	4	5
Hull	19	4,305	2	0	7	19	26
Jennings (La.)	2	770	0	0	1	1	2
Markham	1	60	0	0	0	1	1
Orange	15	7,425	9	0	2	20	22
Pierce Jct.	1	225	0	0	1	2	3
Spindletop	4	350	0	0	2	3	5
Saratoga	2	25	1	0	1	3	4
Sour Lake	4	530	0	0	2	4	6
W. Columbia	2	10	1	0	1	2	3
Vinton (La.)	4	0	4	0	0	14	14
S. Liberty	3	2,700	0	0	3	19	22
Lockport (La.)	3	250	2	0	0	2	2
Miscellaneous	4	10	2	1	14	36	50
Total Feb.	82	17,615	29	2	43	155	198
Total Jan.	64	10,875	23	1	44	131	175
Difference	22	6,740	6	1	1	24	23
Southwest Fields—							
Luling	6	1,500	1	0	2	8	10
Laredo	3	100	0	2	2	10	12
Jim Hogg Co.	8	7,200	0	0	8	13	21
Somerset	0	0	0	0	1	3	4
Callihan	0	0	0	0	0	3	3
Rockdale-Minerva	0	0	0	0	1	3	4
Miscellaneous	0	0	0	0	16	46	62
Total Feb.	17	8,800	1	2	30	86	116
Total Jan.	19	7,100	5	2	32	86	118
Difference	2	1,700	4	0	2	0	2
Grand total Feb.	79	26,415	30	0	73	241	314
Grand total Jan.	83	17,975	28	0	76	217	293
Difference	4	8,440	2	0	3	24	21

N. LOUISIANA AND ARKANSAS

Summary of Field Operations

Districts—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Union Co.	19	4,147	4	2	27	44	71
Ouachita Co.	44	3,467	0	0	27	56	83
Stephens	0	0	0	0	0	1	1
Nevada	2	350	0	0	2	9	12
Bellevue	1	20	0	0	1	2	3
Caddo	3	32	1	0	7	22	29
Cotton Valley	8	1,010	0	0	28	39	67
La. wildcats	16	0	5	8	10	49	59
Ark. wildcats	0	0	0	0	4	38	42
February	93	9,026	13	10	107	260	367
January	126	8,862	30	21	76	237	313
Difference	33	164	17	11	31	23	54

WYOMING

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Big Muddy	0	0	0	0	0	3	3
Salt Creek	17	1,984	0	0	68	53	121
Lance Creek	0	0	0	0	0	4	4
Big Horn Basin	0	0	0	0	9	53	62
Lost Soldier	5	0	2	3	3	28	31
Rock River	0	0	0	0	0	16	16
Fremont Co.	0	0	0	0	0	25	25
Osage	0	0	0	0	7	10	17
Natrona Co.	0	0	0	0	0	16	16
Lincoln and Uintah	0	0	0	0	3	9	12
Baxter Basin	1	0	1	0	1	8	9
Miscellaneous	0	0	0	0	0	23	23
Total Feb.	23	1,984	3	3	91	248	339
Total Jan.	29	5,152	7	1	97	269	366
Difference	6	3,168	4	2	6	21	27

MONTANA

Sunburst	7	1,655	2	0	13	30	43
Miscellaneous	2	0	2	0	7	85	92
Total Feb.	9	1,655	4	0	20	115	135
Total Jan.	7	30	4	1	21	133	154
Difference	2	1,625	0	1	1	18	19

COLORADO

Total Feb.	2	200	1	0	11	81	92
Total Jan.	6	130	5	0	14	85	99
Difference	4	70	4	0	3	4	7

UTAH

Total Feb.	1	0	0	1	1	23	24
Total Jan.	0	0	0	2	1	26	27
Difference	1	0	0	1	0	3	3

NEW MEXICO

Total Feb.	3	1,175	0	0	4	35	39
Total Jan.	3	180	0	0	3	36	39
Difference	0	995	0	0	1	1	0

CENTRAL OHIO

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Licking	0	0	0	0	1	0	1
Ashland	6	0	1	5	5	4	9
Medina	2	0	2	0	3	4	7
Lorain	4	0	2	2	2	4	6
Wayne	9	5	2	6	3	8	11
Richland	0	0	0	0	0	1	1
Vinton	0	0	0	0	0	1	1
Coshocton	2	0	0	2	0	0	0
Holmes	9	0	2	7	11	24	35
Jackson	0	0	0	0	4	1	5
Athens	7	0	0	7	7	5	12
Meigs	0	0	0	0	0	1	1
Summitt	0	0	0	0	0	1	1
Cuyahoga	0	0	0	0	0	1	1
Lawrence	0	0	0	0	0	1	1
Huron	0	0	0	0	1	0	1
Total Feb.	39	5	9	29	37	56	93
Total Jan.	27	29	5	19	36	72	108
Difference	12	24	4	10	1	16	15

LIMA FIELD

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Wood	5	41	2	0	0	7	7
Hancock	4	75	1	0	2	4	6
Allen	2	38	0	0	0	2	2
Auglaize	1	10	0	0	0	4	4
Sandusky	2	10	1	0	0	2	2
Mercer	1	4	0	0	0	4	4
Van Wert	1	5	0	0	0	4	4
Seneca	1	0	1	0	0	2	2
Lucas	0	0	0	0	0	1	1
Ottawa	3	11	1	0	0	1	1
Darke	1	3	0	0	0	1	1
Shelby	0	0	0	0	0	2	2
Hardin	5	55	1	0	0	1	1
Paulding	2	14	0	0	0	1	1
Defiance	0	0	0	0	0	1	1
Crawford	0	0	0	0	0	1	1
Michigan	0	0	0	0	0	2	2
Total Feb.	26	296	7	0	5	40	45
Total Jan.	27	257	4	2	5	48	53
Difference	1	39	3	2	0	8	8

ILLINOIS

Summary of Field Operations

	Comp.	Prod.	Dry	Rigs	Drg.	Ttl.
Clark	3	55	1	0	8	8
Crawford	0	0	0	0	4	4
Lawrence	0	0	0	0	2	2
Wabash	5	85	3	1	1	2
Douglas	0	0	0	0	1	1
Union	0	0	0	0	1	1
Jasper	0	0	0	0	1	1
Coles	0	0	0	0	1	1
Fayette	0	0	0	1	0	1
Total Feb.	8	140	4	2	19	21
Total Jan.	14	278	5	1	17	18
Difference	6	138	1	1	2	3

INDIANA

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Wells	1	0	1	0	0	0	0
Blackford	1	0	1	0	0	0	0
Jay	1	20	0	0	0	0	0
Adams	2	30	0	0	0	2	2
Delaware	1	20	0	0	0	1	1
Randolph	0	0	0	0	0	2	2
Gibson	0	0	0	0	1	0	1
Pike	0	0	0	0	0	1	1
Sullivan	0	0	0	0	0	2	2
Hendricks	0	0	0	0	0	2	2
Knox	1	0	1	0	0	1	1
Total Feb.	7	70	3	0	1	11	12
Total Jan.	8	96	3	0	1	8	9
Difference	1	26	0	0	0	3	3

KENTUCKY-TENNESSEE

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Wayne	5	50	0	0	0	17	17
Estill	0	0	0	0	0	1	1
Wolfe	3	22	0	0	0	5	5
Lee-Owsley	12	98	4	0	2	16	18
Lawrence-Johnson	17	447	1	0	1	29	30
Johnson-Magoffin	13	87	1	0	3	20	23
Floyd	3	0	0	3	0	12	12
Elliott	1	2	0	0	0	3	3
Rowan	0	0	0	0	0	2	2
Breathitt	1	0	0	1	0	0	0
Jackson	2	1	1	0	0	2	2
Madison	0	0	0	0	0	1	1
Fleming	0	0	0	0	0	1	1
Bell	0	0	0	0	0	1	1
Boyd	0	0	0	0	0	1	1
Martin	1	0	0	1	0	3	3
Laurel	0	0	0	0	0	1	1
Harlan	0	0	0	0	0	1	1
Greenup	0	0	0	0	0	3	3
Knox	0	0	0	0	0	1	1
Warren	11	413	4	0	3	30	33
Allen	16	93	8	0	2	19	21
Barren	24	162	4	1	0	40	40
Owensboro	6	25	3	0	1	13	14
Cumberland	7	6	5	1	1	15	16
Russell	0	0	0	0	0	3	3
Logan	2	0	2	0	0	1	1
Simpson	1	0	1	0	1	0	1
Metcalf	0	0	0	0	0	3	3
Greene	1	0	1	0	0	0	0
Kentucky	126	1,406	35	7	14	242	256
Tennessee	5	325	3	0	6	9	15
Mississippi	0	0	0	0	6	20	26
Alabama	0	0	0	0	1	9	10
Georgia	0	0	0	0	1	4	5
Total Feb.	131	1,731	38	7	28	284	312
Total Jan.	94	1,206	25	7	32	244	276
Difference	37	525	13	0	4	40	36

EASTERN FIELDS

Summary of Wells Completed

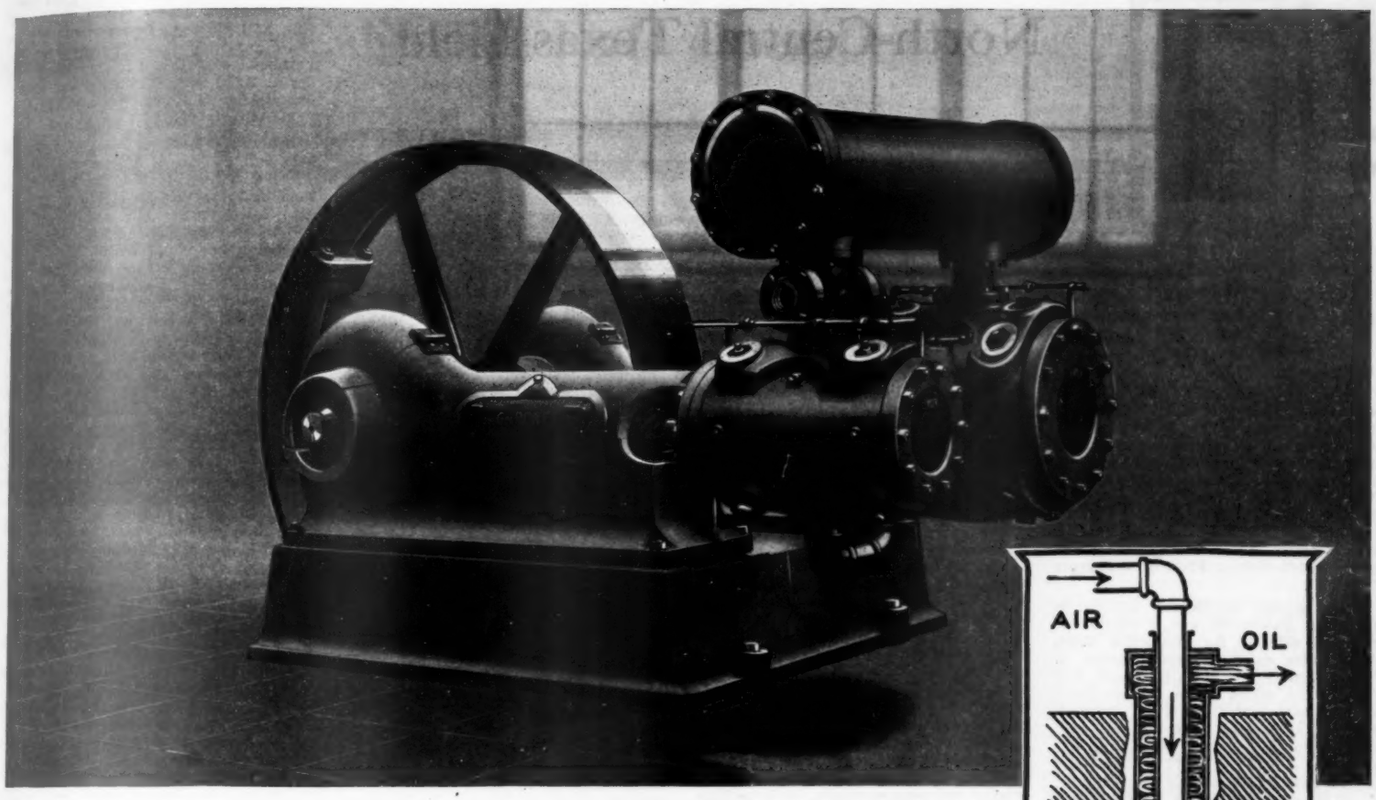
Fields—	Comp.	Prod.	Dry	Gas
Allegany	28	1	8	0
Bradford	73	175	2	1
Middle Field	5	4	0	1
Venango-Clarion	22	24	3	3
Butler-Armstrong	8	8	1	1
Southwest Pennsylvania	26	20	4	16
West Virginia	65	262	10	35
Southeast Ohio	56	486	11	1
Total February	269	1,010	32	67
Total January	291	1,327	45	70
Difference	22	317	13	3

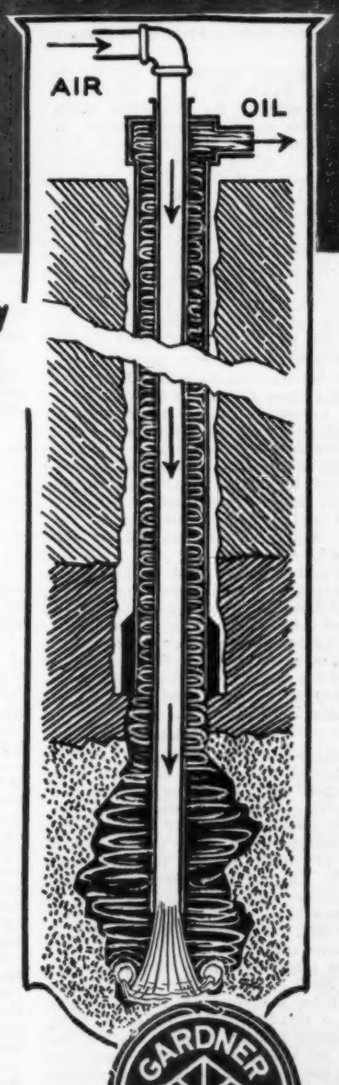
Fields—	Rigs	Drg.	Ttl.
Allegany	14	10	24
Bradford	24	63	87
Middle Field	2	5	7
Venango-Clarion	5	24	29
Butler-Armstrong	12	12	24
Southwest Pennsylvania	7	29	36
West Virginia	61	124	185
Southeast Ohio	43	97	140
Total Feb. 28	168	364	532
Total Jan. 31	164	369	533
Difference	4	5	1

NO MEXICAN PERMITS TO NEW COMPANIES

American and other foreigners who may have been considering the organizing of companies to carry on oil operation in Mexico will have to forego their plans for the present. Notice has just been issued by President Calles that no further drilling permits will be authorized except to companies already in operation.

It is stated that Calles' order was issued in the hope of preventing speculation in oil by companies lacking funds for proper development of their holdings. Calles plans to appoint a technical commission which will revise present concessions for oil operations and rule on their legality. Until this survey is completed, no further concessions will be granted.





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North-Central Texas Field

By George R. Kelley

Number of wells showing for production in Carson County, Panhandle. Two Wilbarger County wildcats make interesting showings. North Young County has best completion of the week. The Texas Co.'s No. 3 Gambrell making 965 bbls. Daily production for North Texas district shows gain of 1,030 bbls.

FORT WORTH, Tex., March 2.—A fairly good gain i the average daily production, a sharp decline in the number of wells completed and increased activity in some of the wildcat districts were outstanding features of the week in North Texas oil fields. None of the fields showed any sensational gains in production though there were some good completions in south Archer, Young County and in the South Vernon Field of Wilbarger County.

There is also considerable activity in the Texas Panhandle and a number of wells are showing for production there, all of them on the Burnett Ranch in Carson County. The largest new well in that field, which is not yet completed is the Crosbie Oil Co.'s No. 1 Burnett, which is now rated as a 600-bbl. well. It is producing from the customary formation at a depth of 2,877 to 2,881 feet and in addition to making the 600 bbls. of oil it is making about 3,000,000 feet of gas daily. The well has declined in production, having made 1,000 bbls. the first 24 hours after coming in and 750 bbls. the second 24 hours and finally dropping off to 600 bbls.

The Marland Oil Co.'s No. 1 Burnett also in Carson County, is showing for a small amount of oil not yet completed. The granite wash formation was found at 3,001 feet and the well is standing 900 feet in oil. The Skelly Oil Co.'s No. 1 Burnett hit the pay at 2,981 and drilled to 2,987 where it made two small flows of oil and about 500,000 feet of gas daily. A liner is to be run and the well swabbed.

Silk and others' No. 3-A Burnett is reported to have found a sandy lime formation at 3,050 feet which was drilled into a total of 5 feet when oil showed up. The well swabbed about 50 bbls. in 24 hours. The Texas Co.'s No. 1 Burnett has 4 feet of the granite wash formation which was topped at 3,060 and the well is swabbing 220 bbls. daily.

Wilbarger Wildcats

Wilbarger County has two wildcat showings of interest, one of which, Levy and others' No. 1 Waggoner, was reported last week as showing for some production. As yet there is nothing of a definite nature reported from either of these wells, both of which are on the Waggoner Ranch. The Levy and others well 2 miles east of the South Vernon production is still swabbing. It recently made one flow of 20 bbls. and swabbed about 55 bbls. in six hours time.

The other wildcat is the Noble Oil Co.'s No. 1 Waggoner. This test is about 2½ miles southeast of the old Sigler well, a small producer drilled in 1920. The Sigler is about 10 miles south of the town of Vernon. The Noble well has made one flow over the top of the derrick but according to late reports the casing is hung and the hole is said to be in very bad shape. Whether a producer is obtained in this well or not it will in all probability lead to other development as the well indicates clearly a productive area.

In Montague County the Texhoma Oil & Refining Co.'s No. 2 Howard is showing for production at the regulation depth of 988 to 1,001 feet. The well has 750 feet of oil standing in the hole. It is the customary low gravity oil for the shallow Montague Pool, testing between 25 and 26 gravity.

In Brown County Gillman and others' No. 2 Moore is a new producer, but will be drilled deper before completing. The well has 6 feet of the shallow sand topped at 1,236 feet and is rated as a 50-bbl. well.

The Texon Oil & Land Co. has made locations for two more wells on University of Texas land in Reagan County. They are Nos. 11 and 12, group 1. No. 11 is located in the center of the northwest of the northeast of Section 36, Block 9 and No. 12 is in the center of the southeast of the northwest of Section 36, Block 9. Both are considered in proven area, though No. 11 is about a half mile east of the present north and south line of production.

North Young County reported the best completion of the week. It is The Texas Co.'s No. 3 Gambrell in the pool northwest of the town of Olney. It is making 965 bbls. daily from the sand at 1,223 feet. The Texhoma Oil & Refining Co.'s No. 3 Gambrell is also a new completion making 265 bbls.

Daily Production Gain

Total daily production for the district this week is 135,375. Production last week was 134,345 bbls., a gain over the week of 1,030 bbls. in daily average. Burkburnett, Electra, Stephens County and the wildcat districts all figured in the gains in production while Ranger and Archer County recorded losses. Burkburnett gained 415 bbls., Electra gained 540 bbls., Stephens County increased 485 bbls. and the gain in the wildcat districts was 1,225 bbls. Ranger lost 130 bbls. and Archer County suffered a decline in daily output of 1,505 bbls.

Completions for the week totaled 66, of which 36 were producers, 29 were dry holes and one was a gas well. New production amounted to 5,070 bbls. There was a sharp decline in the number of completions in Wichita County, there being only six this wek against 23 last week. Archer County had 33 completions, 21 of which were producers making 1,960 bbls. of flush oil. Young County had 10 completions, four of which were producers affording 1,310 bbls. of new production. Stephens County accounted for one completion during the week, a dry hole. Eastland County had two completions, one a producer making 25 bbls. and one a gas well making 21,000,000 feet of gas daily.

Three completions were recorded in Brown County, two producers making 155 bbls., and one dry hole. Wilbarger County reported three completions, all producers with a combined flush output of 630 bbls. The wildcat districts had eight completions, three of which were producers, making a total of 940 bbls.

PRODUCTION REPORT
Week Ending February 26

Burkburnett		
Barkley & Meadows	520	
Gulf Production Co.	700	
Humble Oil & Refining Co.	430	
Magnolia Petroleum Co.	2,860	
Panhandle Refining Co.	340	
Prairie Oil & Gas Co.	10	
Sinclair Oil & Gas Co.	40	
Sun Oil Co.	150	
The Texas Co.	535	
Texhoma Oil & Refining Co.	400	
Miscellaneous	9,015	
Total		15,000
Electra		
Empire Gas & Fuel Co.	1,030	
Gulf Production Co.	915	
Humble Oil & Refining Co.	130	
Magnolia Petroleum Co.	4,145	
Panhandle Refining Co.	60	
The Texas Co.	3,735	
Texhoma Oil & Refining Co.	1,670	
Miscellaneous	5,370	
Total		17,045
Iowa Park		
Gulf Production Co.	40	
Humble Oil & Refining Co.	10	
Magnolia Petroleum Co.	475	
Panhandle Refining Co.	60	
Texhoma Oil & Refining Co.	55	
Miscellaneous	3,100	
Total		3,730
Archer County		
Empire Gas & Fuel Co.	600	
Gulf Production Co	3,820	
Humble Oil & Refining Co.	340	
Magnolia Petroleum Co.	670	
Panhandle Refining Co.	235	
Prairie Oil & Gas Co.	1,025	
Sun Oil Co.	295	
The Texas Co.	2,815	
Texhoma Oil & Refining Co.	2,625	
Miscellaneous	29,420	
Total		41,845
Petrolia		
Gulf Production Co.	35	
Magnolia Petroleum Co.	20	
The Texas Co.	70	
Miscellaneous	260	
Total		385
Stephens County		
Empire Gas & Fuel Co.	80	
Gulf Production Co.	1,265	
Humble Oil & Refining Co.	880	
Magnolia Petroleum Co.	700	
Mid-Kansas Oil & Gas Co.	1,860	
Prairie Oil & Gas Co.	885	
Sinclair Oil & Gas Co.	105	
Sun Oil Co.	240	
The Texas Co.	1,660	
Texas Pacific Coal & Oil Co.	975	
Miscellaneous	6,990	
Total		15,640
Ranger		
Gulf Production Co.	320	
Humble Oil & Refining Co.	55	
Magnolia Petroleum Co.	615	
Mid-Kansas Oil & Gas Co.	160	
Panhandle Refining Co.	285	
Prairie Oil & Gas Co.	510	
Sinclair Oil & Gas Co.	350	
The Texas Co.	250	
Texas Pacific Coal & Oil Co.	790	
Miscellaneous	3,190	
Total		6,525
Young County		
Gulf Production Co.	395	
Humble Oil & Refining Co.	30	
Panhandle Refining Co.	40	
Prairie Oil & Gas Co.	10	
Sinclair Oil & Gas Co.	470	
The Texas Co.	700	
Texhoma Oil & Refining Co.	480	
Miscellaneous	2,955	
Total		5,080
Eastland-Comanche		
Humble Oil & Refining Co.	205	
Magnolia Petroleum Co.	1,170	
Mid-Kansas Oil & Gas Co.	225	
Prairie Oil & Gas Co.	105	
Sinclair Oil & Gas Co.	35	
The Texas Co.	160	
Texas Pacific Coal & Oil Co.	105	
Miscellaneous	1,950	
Total		3,955
Moran		
Empire Gas & Fuel Co.	45	
The Texas Co.	130	
Texhoma Oil & Refining Co.	120	
Miscellaneous	2,100	
Total		2,395
Other Pools		
Wilbarger County	5,045	
Montague County	80	
Jack County	25	
Palo Pinto County	720	
Brown County	915	
Coleman County	75	
Callahan County	2,280	
Mitchell County	1,595	
Reagan County	11,050	
Scurry County	45	
Glasscock County	25	
Carson County	1,695	
Hutchinson County	100	
Wheeler County	125	
Total		23,775
Total this week		135,375
Total last week		134,345
Gain		1,030

Wichita County Completions

Couch and others' No. 1 Smith, dry at 1,604 feet; Magnolia Petroleum Co.'s No. 113 Reilly, 30 bbls. at 1,522 feet; Texhoma and others' No. 1 Bailey, 20 bbls. at 1,330 feet; Beaver Drilling Co.'s No. 1 Roberts, dry at 985 feet; Magnolia Petroleum Co.'s No. 4-F Peer Waggoner, dry at 2,210 feet; O'Donohoe and others' No. 4 Allen & Kemp, dry at 1,770 feet.

Archer County Completions

Bridwell and others' No. 5 Wilson, 100 bbls. at 1,613 feet; Carter and others' No. 5-C White, 45 bbls. at 1,602 feet; same operators' No. 21-E White, 35 bbls. at 1,596 feet Franklin and others' No. 3-B Parrish, 90 bbls. at 1,558 feet; Jetter and others' No. 3 White, dry at 1,620 feet; Lincoln and others' No. 1 Langford, dry at 1,710 feet; Magnolia Petroleum Co.'s No. 12 Parrish, 85 bbls. at 1,596 feet; Phillips and others' No. 6 Wilson, 110 bbls. at 1,522 feet; Riner and others' No. 14-A Wilson, 140 bbls. at 1,622 feet; Clark and others' No. 1 Rogers, dry at 1,412 feet; Davis and others' No. 2 Roach & Junker, making 125 bbls. at 1,232 feet; Eureka Drilling Co.'s No. 1 Parkey, dry at 1,526 feet; Gwynn and others' No. 1 Pastusek, dry at 1,500 feet; Hobbs and others' No. 3 Love, dry at 1,448 feet; Humble Oil & Refining Co.'s No. 2 Stampfli, 75 bbls. at 1,365 feet; Maer and others' No. 3 Monohon, 200 bbls. at 1,334 feet; Medora Oil Co.'s No. 1 Hayter, dry at 1,370 feet; Murchison and others' No. 16 Griffin, 100 bbls. at 1,316 feet; same company's No. 3-A Harmel, 10 bbls. at 1,285 feet; same company's No. 8-B Harmel, 75 bbls. at 1,289 feet; same company's No. 9 Harmel, 10 bbls. at 1,291 feet; Mutual Oil Co.'s No. 6 Harmel, dry at 1,278 feet; Petroleum Producers' No. 9 Housler, 125 bbls. at 1,141 feet; same operator's No. 10 Housler, dry at 1,157 feet; same operator's No. 11 Housler, 200 bbls. at 1,146 feet; Shamrock Oil Co.'s No. 20 Goldsmith, 50 bbls. at 1,337 feet; same operator's No. 14-C Richardson, 125 bbls. at 1,302 feet; Shaw and others' No. 5 Housler, dry at 1,171 feet; The Texas Co.'s No. 1 mineral fee, 100 bbls. at 1,374 feet; same company's No. 9-B Ragle, 50 bbls. at 1,086 feet; United Central Oil Co.'s No. 1 Rogers' dry at 1,475 feet; same company's No. 2 Rogers, dry at 930 feet; Wollett and others' No. 5 Griffin, 60 bbls.

Young County Completions

Burton and others' No. 1 Hankins, dry at 1,208 feet; Krog and others' No. 1 Boone, dry at 1,204 feet; Murchison and others' No. 5 Gambrell, making 30 bbls. at 1,211 feet; same operator's No. 1 Weideman, dry at 1,302 feet; Reed and others' No. 1 Clark, dry at 1,258 feet; same operators' No. 1 Foster, dry at 1,210 feet; Simms Oil Co.'s No. 5 Carpenter. 50 bbls. at 1.038 feet; The Texas Co.'s No. 3 Gambrell, 965 bbls. at 1,223 feet; Tehoma Oil & Refining Co.'s No. 3 Gambrell, 265 bbls. at 1,223 feet; Texas & Pacific Coal & Oil Co.'s No. 1 Carpenter, dry at 1,223 feet.

Stephens County Completions

Republic Production Co.'s No. 2 Knox, dry at 3,560 feet.

Eastland County Completions

Panhandle Refining Co.'s No. 1 Hightower, 25 bbls. at 3,325 feet; Tidal Osage Oil Co.'s No. 1 Owens, 21,000,000 feet of gas at 3,279 feet.

Brown County Completions

Calvert Brothers' No. 1 Prater, dry at 1,450 feet; Gillman and others' No. 7 Newton, 5 bbls. at 1,289 feet; Mahlstedt-Mook Oil Co.'s No. 4 Newton, 150 bbls. at 1,284 feet.

Wilbarger County Completions

Humble Oil & Refining Co.'s No. 5 Castlebury, 285 bbls. at 1.318 feet; Petroleum Producers' No. 3 Dill, 25 bbls. at 1,841 feet; South Vernon Oil Co.'s No. 2 Stephens, 320 bbls. at 1.305 feet.

Wildcat Completions

Carson County—American Refining Co.'s No. 2 Burnett, 750 bbls. at 2,978 feet; Gates Oil Co.'s No. 1 Burnett, 65 bbls. at 3,028 feet.

Wheeler County—Whittington and others' No. 2 Williams & Laycock, 125 bbls. at 2.220 feet.

Baylor County—Harris and others' No. 1 Howe, dry at 1,602 feet; Monroe Production Co.'s No. 1 Wallace, dry at 1,801

(Continued on Page 98)

California Field Operations

By L. P. Stockman

Recompletion of No. 1 Athens, discovery well, in northern part of Rosecrans Field, opens new producing zone there at 5,200 feet. Well starts at rate of 1,545 bbls. of 36.6 gravity oil. Nearly as many wells completed at Dominguez last week as during all of January. Shallow producer at Huntington Beach.

LOS ANGELES, Cal., Feb. 28.—There were four wells put on production at Rosecrans during the past seven days, of which two were new wells and the others redrills. No. 9 Howard Park of the Union was the first new producer to be added to the field's list. Flowing through a ½-inch bean under a pressure of 800 pounds, it tanked 605 bbls. of clean 37.2 gravity oil during the first 24 hours. It was drilled to 4,342 feet and finished with an 8¼-inch oil string landed at 4,318 feet and 4,200 feet of 2½-inch tubing. The Union added another producer to its list by recompleting No. 1 Padelford after redrilling and deepening it from 3,753 feet to 4,141 feet. The oil string used was a 6¼-inch, which contained 200 feet of 80 mesh screen. Upon being returned to production, the well gauged 420 bbls. of clean 42.4 gravity oil. A casing pressure of 650 pounds has been built up back of a 1-inch bean.

The biggest and perhaps the most pleasant surprise which featured this field during the week was the recompletion of E. J. Miley's No. 1 Athens. Miley, it will be remembered, pioneered the northern part of the field a few months ago and finished this well doing 1,350 bbls. per day from 4,947 feet. His success in securing production at that time proved up considerable acreage and resulted in a good deal of development work which would not have been undertaken had he not been successful. The well soon dwindled down, however, to a comparativeyl small producer. As a result, Miley decided to do some additional exploratory work and he killed the well and carried it down to 5,238 feet. A very good sand was cored at and above this depth but, upon again going into the hole, the drill pipe became stuck. It was shot at 4,995 feet and pulled from that point. After several weeks of work the hole was finally cleaned out to 5,084 feet and a string of 4¾-inch landed at 5,077 feet. It was returned to production during the early part of this week, flowing 1,545 bbls. of clean 36.6 gravity oil. It has proven quite consistent since being returned to production and, judging by today's output, 1,520 bbls., it should not fall off as rapidly as practically all of the other wells in the field have done.

Opens New Producing Zone

Miley's achievements in this field have been particularly noteworthy: It was he who secured the first satisfactory shut-off in the upper Rosecrans sand, which the Union discovered but was unable to produce from because of water trouble. Miley's latest achievement, the recompletion of his No. 1 Athens, is his third success in this area. Just previous he had pioneered and developed deep production outside of the then proven limits of the field. He has now opened a new deep zone, which will in the future be known as the Miley zone. We now have in this field four producing zones, the deepest at 5,200 feet and the shallowest around 3,900 feet. Between these two there is a sand at 4,400 feet and another at 4,900 feet. All have been fairly well tested, except the deep zone at 5,200 feet. Miley will probably test this zone later with his No. 3, now standing cemented at 5,150 feet.

In addition to recompleting No. 1 Athens, Miley put two other holes on a test but neither was finished. No. 4 Athens started off at the rate of 100 bbls. an hour until water broke in and cut short the production test. Miley drilled this hole to 4,985 feet and finished it with a 4¾-inch oil string landed at 4,913 feet. The pressure back of a ¾-inch bean climbed rapidly up to 340 pounds. No. 5 Athens was put on a semi-production test at 4,727 feet to see what it would do. Flowing through a 1-inch bean under a pressure of 375 pounds the well started off flowing at the rate of 600 bbls. a day. It is showing a rather large cut, however, and it would not be surprising if Miley recemented both of these holes at their present depths for another test before going down.

The Marine Oil Co.'s No. 33 Rosecrans was an unusually good well when turned loose from 4,409 feet. Flowing through a 1-inch bean under a pressure of 300 pounds it tanked 2,487 bbls. of oil in 24 hours. The output tests 35.6 degrees and cuts 1.5 per cent. The Bankline Oil Co. secured a small flow from 4,853 feet but the production dropped off very quickly and the company is deepening with better prospects ahead. The well is in an oil sand at present at 4,908 feet. George F. Getty's No. 2 Athens started gassing at 4,366 feet while being cored a few days ago and it is blowing gas, mud and water in all directions. It is still running wild and, although the derrick has held up so far it will go to pieces within a short time as the crown block has already been blown off. Because of the fire hazard all boiler fires in the immediate vicinity have been extinguished. Drilling has been temporarily suspended as a result on five holes.

Dominguez

There were nearly as many new wells finished at Dominguez last week as there were during the entire month of January. Three new producers were added during the past seven days, as compared with five during January. The Union headed the list with No. 9 Hellman, finished at 4,168 feet. The output, 1,440 bbls. per day, is clean and tests 29.9 degrees. The Shell brought in another new well on its Manuel lease, No. 4, after plugging back from 4,326 feet to 4,251 feet. Flowing through a ⅞-inch bean under a pressure of 450 pounds, it tanked 1,415 bbls. of 29.3 gravity oil which cut 2 per cent. The completion of this well leaves the Shell with two drillers on the Manuel lease, No. 1 at 4,307 feet and No. 5 at 4,005 feet. The former is held up with bottom water, while the latter is being delayed with a fishing job. The company has several prospective producers on the Reyes lease, the most promising of which is No. 22 at 4,170 feet. The United Oil Co. finished No. 4 Dominguez as a flowing well at 4,257 feet. Its maximum output on completion was 610 bbls. of 30.5 gravity oil which showed a cut of 1 per cent. It is flowing through a ½-inch bean under a pressure of 440 pounds. No. 2 has been plugged back from 4,447 feet to 4,338 feet, while No. 3 is in a fairly good oil sand at 4,300 feet. The Marland's deep test is down 2,650 feet and, judging by the size of the hole, 18-inch, the company expects to go quite deep. The Associated did not make any headway with No. 5 De Francis at 4,360 feet and will attempt to sidetrack the 38 feet of drill pipe remaining in the hole. The Henderson Petroleum is plugging back No. 1 Susana and will try out the few showings around 4,150 feet.

Inglewood

No. 1 Cone of the Petroleum Securities (Doheny) was a 232-bbl. pumper upon completion, the oil testing 17.1 degrees and showing a cut of 5 per cent. It was drilled to 1,414 feet and finished with a 10-inch oil string carrying 225 feet of 60 mesh screen. The company is hauling in material for Nos. 2 and 6, building the rig for No. 3 and grading for No. 4. The Pan American cored an oil sand in No. 2 Sentous at 1,870 feet and the company is landing a string of 11-inch. No. 7 is being rigged up and will probably be spudded in upon the completion of No. 2. The Petroleum Midway (California Petroleum) cored a fairly good sand in No. 1 Smith at 1,874 feet and landed a string of 12½-inch at 1,558 feet. No. 1 Moynier is rigged up but has not yet been spudded in. The Standard's No. 3 on Los Angeles Investment lease No. 1, a recent completion, developed bottom water at 2,519 feet and a cement plug will be set on bottom. Neither of the company's two holes on Los Angeles Investment lease No. 2, No. 1 at 5,054 feet and No. 2 at 1,848 feet, has shown anything to date. No. 1 Potter-Smith at 5,961 feet and No. 1 Stocker at 4,406 feet are also still dry. On Vickers lease No. 1, the Standard has one pumper doing about 85 bbls. a day and a driller. No. 2, going ahead in a blue shale at 585 feet. No. 3 is being rigged up and will probably be spudded in within the next week. On Vickers lease No. 2, No. 1 is standing cemented at 1,174 feet. The Universal Consolidated spudded in No. 1 Youngsworth and reports 825 feet of hole. Oscar Howard landed a string of 8¼-inch in No. 1 Machada at 2,290 feet. The Mohawk is having a lot of trouble with sand in its first well, No. 1 Machada, and as a result it is only on production intermittently.

Torrance

The General Petroleum finished two new wells at Torrance, both on the Poggi lease. No. 2 was an 82-bbl. pumper from 3,825 feet after being finished with a 6¼-inch oil string carrying 220 feet of 50-mesh screen. No. 4 started off pumping 121 bbls. of 16.6 gravity oil which cut 4 per cent. It was drilled to 3,817 feet and finished with a 6¼-inch oil string carrying 220 feet of 50-mesh screen. No. 1 was put on a pumping test at 3,825 feet but as it is going to sump no estimate is available of the output. No. 3 is drilling ahead at 3,450 feet, while No. 5 is making hole at 2,890 feet. Rigs are up for Nos. 6, 7 and 8 but actual drilling has not been started. One new hole was spudded in during the week, the Chanslor-Canfield Midway Oil Co. starting work on No. 36 Del Amo. The company is building a rig for No. 43 and should be ready to spud in within the next week or 10 days. Work has been temporarily suspended on the company's deep test, No. 2 Dominguez. The Shell's deep hole, No. 2 Kettler, is also standing idle after having been plugged back from 5,373 feet to 4,565 feet.

Long Beach

The Shell finished No. 4 Kent at Long Beach and it started off pumping 136 bbls. of 20.8 gravity oil which cuts a little better than 10 per cent. It was finished at 4,659 feet with a 6¼-inch oil string carrying 550 feet of 60-mesh screen. The Pan American's No. 1 Pyle-Coffin, a recent completion at 4,903 feet, has cleaned up and the well is at present pumping 65 bbls. of clean 24.8 gravity oil. W. R. Ramsey finished his No. 5-B Municipal at 4,500 feet and it is scheduled to be swabbed tomorrow. The A. T. Jergins Trust should begin bailing No. 15 Municipal as it has been finished at 4,118 feet. The Industrial Oil Syndicate finished No. 3 Bernstein at 5,010 feet and preparations are under way to finish what looks to be a small well. The Fred B. Foster Co. is cleaning out No. 55, drilled to 4,406 feet, following a wet job. E. L. Blanton's deep test, No. 2 Trust, is drilling ahead in a hard sand at 5,220 feet. The hole has only shown a few minor indications to date.

Huntington Beach

The Standard Oil Co. secured both an oil and gas production when No. 5 Thompson at Huntington Beach was turned loose from 3,294 feet, after being finished with an 8¼-inch oil string carrying 150 feet of 80-mesh screen. Flowing through a ½-inch bean under a pressure of 450 pounds, the well is making 42 bbls. of 23.1 gravity oil which cuts 2 per cent and approximately 1,000,000 feet of gas daily. This is the shallowest well on the lease and the large amount of gas produced is somewhat unusual from this depth. The Petroleum Midway put No. 2 on Columbia lease No. 2 on a production test after an idleness of several months and finished a 70-bbl. well, the oil testing 18.3 degrees and showing a cut of 10 per cent. The hole was originally drilled to 3,900 feet but later

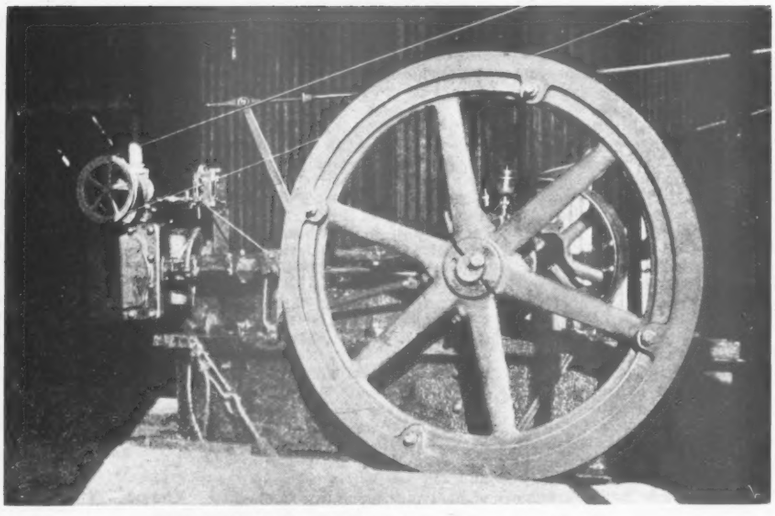
TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Following is a list of tankers, date departed, destination, kind of cargo and amount in barrels:

Hagood, February 16, Boston, crude	73,098
Wm. Rockefeller, February 20, New York, crude	138,060
Algonquin, February 21, New York, crude	71,462
Ernacia E. Powell, February 21, Philadelphia, fuel	76,457
Standard Arrow, February 22, New York, refined	95,469
John D. Archbold, February 22, New York, crude	139,012
Coastwise	
Richmond, February 16, Portland, fuel	65,110
Salia, February 16, Seattle, fuel	65,786
Utacarbon, February 17, Martines, fuel	76,124
K. R. Kingsbury, February 17, Richmond, crude	84,382
Frank H. Buck, Avon, crude	64,033
A. S. Miller, February 17, Richmond, crude	74,119
Robt. E. Hopkins, February 17, Avon, crude	75,960
Capt. A. F. Lucas, February 18, Seattle, refined	36,870
Frank G. Drum, February 19, Avon, crude	65,017
La Purisima, February 20, Portland, refined	49,014
Atlas, February 20, Astoria, refined	15,172
Warwick, February 20, Martines, refined	46,884
K. R. Kingsbury, February 21, Richmond, crude	84,980
W. S. Miller, February 21, Richmond, crude	74,080
Robt. E. Hopkins, February 16, Avon, crude	75,411
Utacarbon, February 21, Oleum, crude	75,604
Exports	
Tascalusa (Br.), February 17, Chile, fuel	60,791
Santa Maria, February 17, Chile, fuel	80,970
Coalinga, February 17, Balboa, fuel	75,429
Montebello, February 17, Honolulu, fuel	76,811
Santa Nazario (Br.), February 19, Buenos Aires, fuel	97,969
Shabonee (Br.), February 21, Japan, fuel	60,998
San Gaspar (Br.), February 21, Buenos Aires, fuel	106,472
From Port San Luis	
Oleum, February 20, San Diego, fuel	32,476
Cathwood, February 22, Oleum, crude	75,192
From San Francisco	
Tejon, February 16, Seattle, fuel	53,405
El Segundo, February 1, Vancouver, refined	21,475
Wm. F. Herrin, February 17, Cordova, fuel	49,180
Alaska Standard, February 17, Eureka, refined	9,186
Atlantic Sun, February 20, Jacksonville, refined	77,369
Kewance, February 21, Los Angeles, refined	28,740

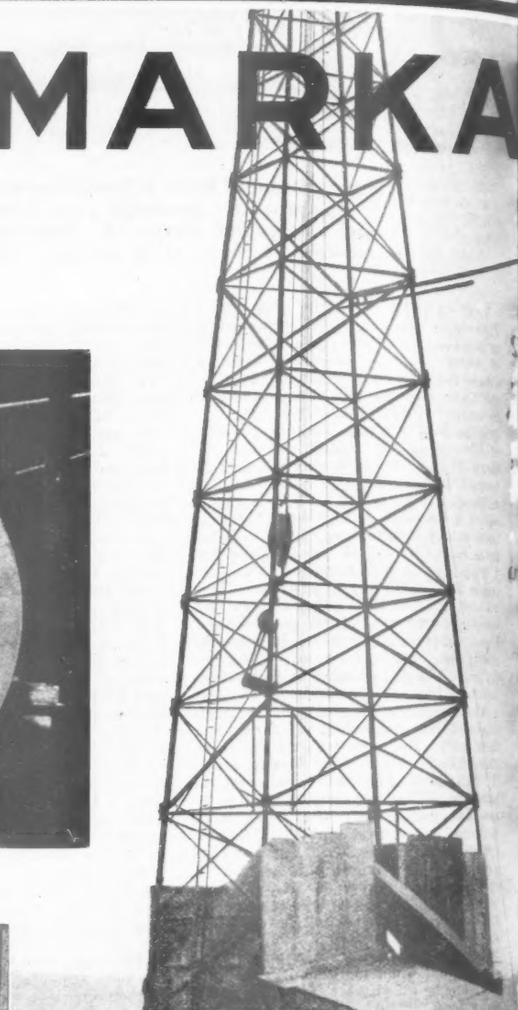
"OILWELL"
ESTD. 1862.
TRADE MARK.
(REGISTERED)

A REMARKAB



THE "OILWELL" 12"x 12" ENGINE WHICH DID THE DRILLING.

THESE ARE THE MEN WHO RAN THE TOOLS THAT DID THE WORK—JAMES McGRANAHAN, THOMAS BANNON, SUPT. CLIFFORD ROSS, AND FRANK BURGDORFER.



OIL WELL S

WORLD'S OLDEST AND LARGEST MANUFACTURERS OF OIL

"OILWELL"
ESTD. 1862.
TRADE MARK.
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"OILWELL" ESTD 1862 C O TRADE MARK REGISTERED

ABLE RECORD

5285 FEET IN 116 DAYS WITH AN "OILWELL" DRILLING ENGINE

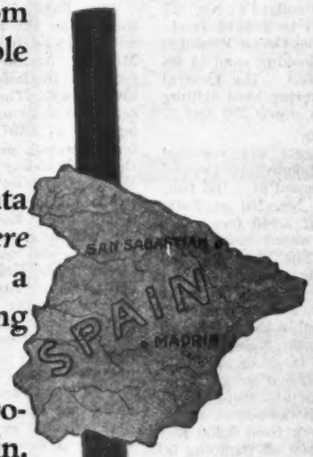
A "No Man's Land"—

5300 feet above sea level in the mountainous region of Northern Spain, about 75 miles southeast of San Sebastian, where roads (from December to May) are either blocked by snowdrifts or impassable on account of deep mud—

That is the site of this unusual Wildcat.

In a region where neither well-logs nor definite geological data were available and where wood was used for fuel, *5285 feet were drilled in 116 working days* with an "OILWELL" 45 H.P. Boiler, a 12" x 12" "OILWELL" Drilling Engine and with "OILWELL" Drilling Tools, *and not a single fishing socket was used.*

This remarkable record was made on the Cia. Petrolera Ibero-Americana's test well, near Gastiain, Province of Navarra, Spain.



"OILWELL" *Products World Renowned*
Both above and under ground.

SUPPLY CO.

FIELD EQUIPMENT BRANCH STORES IN ALL OIL FIELDS

"OILWELL" ESTD 1862 C O TRADE MARK REGISTERED

plugged back to 3,457 feet. The Pan American recompleted No. 2-A Johnson after redrilling and deepening it from 2,770 feet to 2,847 feet and was rewarded with a 184-bbl. pumper, the oil testing 21.1 degrees and showing a cut of 3 per cent. The Associated has had No. 2 Wardlow ready for production for some time but unavoidable delays have held up the test of this 3,552-foot hole.

Montebello Field

The Standard got a nice showing of oil and gas in No. 1 Howard-Smith in the Montebello Field at 4,249 feet and it will be interesting to watch the test made of this hole, which, if successful, will result in a western extension of the district. The company is working with two holes on the Baldwin lease, No. 60 at 4,703 feet and No. 62 at 4,525 feet. The Pan American is running in a string of 3¼-inch in No. 1 Jesurum in the Rideout Heights section of the old Whittier Field and will land around 4,445 feet. Six feet of sand has been drilled through and the company will set the oil string just above the showing. The Standard's No. 21 Home is drilling ahead in a hard sandy shale at 4,400 feet. The Ocean View Oil Co. has a fairly good looking sand in its well No. 2 at 3,546 feet. The Central Oil Co. is still encountering hard drilling and as a result is only down 700 feet.

Coyote

The Standard has not yet resumed work on No. 100 Murphy at Coyote, which is standing cemented at 4,163 feet, but is going ahead in No. 101 at 3,400 feet and in No. 102 at 3,645 feet. No. 40 Emory is drilling ahead in a sandy shale at 3,400 feet. The Shell spudded in No. 3 Pico at Fullerton and is down 185 feet at present. A grade is being made for No. 3 Fisher, also in this area, and the hole will probably be spudded in within the next two or three weeks. The Brea Canyon Oil Co. is going ahead in No. 38 at 1,203 feet. The Petroleum Co. secured a small production from No. 1 Gillman when the well was put on a test after being plugged back from 3,200 feet to 2,905 feet. It started off pumping 50 bbls. of clean 22.8 gravity oil but within a short time sand trouble developed and the company is cleaning out.

The Union's No. 6 Morse at Richfield was a big disappointment when put on a test. Instead of being good for 500 bbls. a day, as was expected, it resulted in only a 50-bbl. pumper from 4,509 feet. The well had about 100 feet of good sand but it was apparently not heavily saturated. The General Petroleum found a few upper showings in No. 6 Thompson, also at Richfield, around the 3,200-foot level and, although the well has several hundred feet to go, these indications are encouraging. The well is in proven territory and will probably result in a good pumper upon completion. The Tonner Oil Co. got a nice gas showing in No. 1 Swan at 906 feet and considers it a favorable indication. The Chicksan Oil Co. is being held up in No. 2 Bradford at 3,550 feet because of a fishing job but the delay will probably only be temporary.

Newport

Work has been temporarily suspended on the Newport Petroleum Co.'s tunnel at Newport, dug to a depth of 240 feet on an angle of 45 degrees, and it is not known how soon the company will resume work. The only success attained so far has been the discovery of fossil remains and a small tar patch now and then. The Interstate Oil Co. is building a rig for its second hole on the Mesa lease, which is expected to be completed around 700 feet. Newport has been receiving a good deal of attention during the past few months but conditions seem to be quieting down somewhat at present. An asphalt plant in the immediate vicinity would stimulate drilling and probably result in a steady production instead of the present intermittent pumping that is being done. None of the operators in this area at present can be making anything from their leases because of the small output and difficulty in disposing of any production obtained.

The Shell is cleaning out No. 2 Bryant at Seal Beach, following its recent gas blow out, and is going ahead in No. 3 on the same lease at 3,800 feet. No. 1 is making about 90 bbls. of oil and 1,800 bbls. of water from 4,620 feet. The Wilshire Oil Co. has passed the 5,400-foot level in its Bandini wildcat but has not yet picked up a thing. The Associated's No. 101 Fox Hills in the Beverly Hills region, which will be carried down as a deep test, is at present going ahead at 2,400 feet. The Shell apparently had a dry hole in No. 1 Virginia at Los Cerritos, northwest of Long Beach, as this 5,050-foot hole has not shown any encouragement to date. The Marland has an equally dry hole in its Davidson City wildcat, which has just passed the 3,758-foot level. The Manhattan Pacific has recemented its Hermosa wildcat at 3,800 feet for the second time. This hole was looking fairly good and should be watched during the next few weeks. The Winwell Oil Co. drilled out the cement in its Hawthorne wildcat and is at present completing preparations for a water test. The hole has been carried down to 5,574 feet and, while it has at times afforded some encouragement, it has only an outside chance of securing production.

The Shell is putting the finishing touches on the rig for No. 1 Stubbs, a wildcat to be drilled in the vicinity of La Mirada. Another week or two will be required to finish rigging up and get under way. The Associated landed and cemented a string of 11-inch in its Newhall test at 3,397 feet. Casing was landed for protection purposes only and not as the result of any favorable showings. The Union is drilling ahead in a brown shale in No. 1 Sangus at 1,600 feet. Unusually slow footage has been made in this wildcat because of a treacherous formation. The company's latest wildcat at Ocean Park Heights is going ahead at 600 feet, very little time having been lost in getting under way. The Standard has started construction of the rig for No. 1 Hadley, its Rivera wildcat, and drilling will be started immediately upon its completion. The Chino-Corona United Oil Co. will drill another test in the Puente Hills, notwithstanding the fact that its first attempt covering a period of four years was unsuccessful.

Miscellaneous Drilling

The Standard landed and cemented a string of 6¼-inch in its San Emedio wildcat on Section 28-11-22 at 3,844 feet and is going ahead on Section 5-10-22 at 1,650 feet, the present formation being a brown shale. The Chanslor-Canfield Midway Oil Co. has nearly finished cleaning out the Sentinel Oil Co.'s old wildcat near Delano and should be in a position to begin making new hole within the near future. The company is about 100 feet off bottom, 2,360 feet. The Standard's Lost Hills wildcat is drilling in a blue shale at 5,470 feet and, since it has not shown a thing to date, it has been classified for some time as extremely doubtful. The Union also has a rather disappointing wildcat in its Rio Bravo test, which is at present drilling ahead in a blue shale at 5,490 feet. Notwithstanding the fact that the Pan American abandoned No. 1 Parkford on the Kern River Bluffs after going to 5,048 feet, the St. Helens will continue work with its hole a short distance away. The latter is now down approximately 4,000 feet and will be carried down to the 5,000-foot level. Work has been suspended, however, on the Central's test, Section 36-28-28, at 2,499 feet for several weeks. The Marland is cleaning out on Section 16-28-27 at 2,660 feet and is spudding in a new hole 1 mile away on Section 16-28-26.

The Shell is drilling in a hard sand at 3,887 feet in No. 1 Mountain View, its Weed Patch wildcat. So far this hole has been devoid of any showings of importance. The Main Oil Co. stopped drilling on its Wasco wildcat at 4,800 feet and will land a combination string preparatory to making a production test. The showings to date have not been sufficient to expect production. The Snowolene Oil Co.'s Jacalitos Dome test, near Coalinga, Section 22-21-15, is still idle at 4,025 feet with no date set for resumption of work. The Marland started work on Section 26-21-15 several weeks ago and, while some material has been hauled in, nothing further has been done toward constructing the derrick. The General Petroleum is still held up with a fishing job in its Kettleman Hills wildcat, drilling to 6,197 feet. There is still over 1,000 feet of drill pipe in the hole and, while some progress has been made, a complete recovery should take several more weeks of work. The Marland is drilling ahead on Section 12-22-17 at 4,905 feet, the formation being a brown shale. These two holes should prove fairly good tests for this area.

Ventura

The Shell started work on two derricks, Nos. 10 and 11 on the Gosnell property in the Ventura Avenue Field and staked locations for Nos. 12, 13, 14 and 15. This new work resulted from the success which attained the Associated's efforts on its Lloyd lease recently. The Shell is also building a derrick for No. 3 Edison and should spud in this hole within the next two or three weeks. The Associated, in addition to three drillers on the Lloyd lease, No. 15 at 651 feet, No. 17 at 3,801 feet and No. 18 at 3,200 feet, is grading for No. 21 and rigging up No. 22. The Henderson Petroleum finished drilling its Ventura County wildcat at 4,920 feet and will plug back and test out the upper showings before abandoning. The Ring Oil Syndicate is making a pumping test of its South-Mountain wildcat, Section 23-3-21, but so far the well has only shown a slight coloring on the water produced. The Union's South Mountain well, No. 1 Snyder, is being temporarily delayed with a fishing job at 2,470 feet. The Brooks Oil Co. finished its No. 4 at Santa Maria and secured a 50-bbl. pumper from 3,056 feet. The Oak Ridge Oil Co. is abandoning No. 1 Mahoney, its San Luis Obispo wildcat at 3,654 feet as a dry hole. E. J. Miley is drilling ahead in No. 1 Smith, Section 22-31-12, in a brown shale at 1,480 feet. The San Martinez Oil Co. cemented a string of 15½-inch in its Yolo County test, Section 36-11-1, at 475 feet, some time ago but has not yet resumed work.

Oil Field Operations

Oil field operations reported to the State Oil and Gas Supervisor show 27 new wells started, as compared with 18 during the previous week, bringing the total for the current year to date to 149, as compared with 245 at the same date last year. Of the 27 notices to drill filed this week, 3 were for wells in the Inglewood Field, 3 in the Rosecrans Field, 7 in the Torrance Field, 1 at Newport, 4 in the fields of Ventura County and 9 in the fields of Kern County. There were 20 tests for water shut off made this week, 3 more than during the preceding seven days. Deepening or redrilling jobs totaled 31, as compared with 14 during the period just preceding. There were 7 holes abandoned, bringing the total for the current year to date to 66, as compared with 70 at the same date last year. Permits were issued for the following new wells:

Torrance

Location, Company, Well—
C. C. M. O. Co.—
16-4-14 Del Amo 36.
16-4-14 Del Amo 42.
General Pet. Corp.—
30-4-13 Poggi 6.
30-4-13 Poggi 7.
30-4-13 Poggi 8.
Petroleum Securities Co.—
30-4-13 Kleinmeyer 16-B.
22-4-14 Van Alen Oil Co. 7.

Inglewood

Pan-American Pet. Co.—
17-2-14 Sentous 7.
Petroleum Midway Co., Ltd—
8-2-14 Moynier 1.
Standard Oil Co.—
8-2-14 Vickers 1-2.

Rosecrans

7-3-13 E. L. Blanton 1.
Union Oil Co.—
18-3-13 Howard Park 10.
18-3-13 Howard Park 11.

Ventura

Shell Co.—
27-3-23 Gosnell 11.

Conejo

4-1-20 J. A. Hess 2.
4-1-20 J. A. Hess 3.
34-2-20 W. C. Currier 7.

Midway-Sunset

28-12-24 B. B. & O. Oil Co. 27.
23-32-23 Blair Oil & Ref. Co. 1-A.
6-32-24 Honolulu Cons. Oil Co. 55.
34-31-24 Midland Oilfields Co., Ltd., 2-B.
33-31-24 Pacific Oil Co. 25.
1-32-23 Pacific Oil Co. 98.
19-31-24 Pacific Oil Co. 8.
19-31-24 Pacific Oil Co. 12.

Elk Hills

27-30-24 Pacific Oil Co. 23.
The following wells were abandoned:

Long Beach

E. L. Blanton—
19-4-12 Duncan 3.
30-4-12 West Continental Oil Co. 1.

Torrance

C. C. M. O. Co.—
14-4-14 Torrance 24.
10-4-14 Torrance 30.

Brea Olinda

Shell Co.—
2- 3-10 Orange 3.

Mendocino County

30-19-13 Mendocino-Midway Oil Synd. 1.

East Central Texas

By Staff Correspondent

MEXIA, Tex., Feb. 28.—Before this has reached The Oil and Gas Journal the fate of the Atlantic Oil Producing Co. and Robert Penn's test on the Absher farm, Jordan survey, Bazette district, Navarro County, may be known. If it is a successful test it will start the wildest rush of operations ever known but if it is a failure it may mean nothing more than that the trade must wait for the completion of the nearby Humphreys Boyd Oil Co.'s test on the Walthall farm.

Just at this time every one interested in the Bazette area is suffering from a case of nerves. One would think the fate of the whole industry hinged on the success or failure of Bob Penn's and Colonel Humphreys' two wildcat wells. If both are dry it will mean no more than that the question of Bazette as a potential oil country will have to be settled by the drilling of additional tests. If one or the other wells comes in a big producer the trek to Bazette will be historic.

Two hundred locations have been staked near the two Bazette tests. Every pipe line company in the East Central Texas territory is prepared to extend its transportation facilities into the field from the Powell Field. Oil field supply companies are ready to take care of their trade without any delay. Options have been bought on the services of teamsters and rig builders, trucks and teams, so they can be commandeered at once if there is need for them. The rush into Wortham, which broke all records will be eclipsed by the rush to the Bazette country, with the town of Kerens as the center, if one or both of the tests on the Walthall and Absher farms come up to expectations.

Today, the Atlantic Oil Producing Co. and Penn started to drill plug. Pipe had been set at 2,950 feet. This test got some chalk, the top of which was found at 2,668 feet and the bottom at 2,705 feet. At the same time the Humphreys Boyd Oil Co.'s No. 1 Walthall was drilling below the bottom of the chalk reached at 2,646 feet. The top of the chalk in this test was found at a depth of 2,152 feet. Notwithstanding the conditions in the Atlantic-Penn test, Mr. Penn feels that he has a good chance of getting production, but the real test is the Humphreys Boyd Oil Co.'s well in which everything thus far has proceeded according to the dope of Julius Fohs, geologist. This well cannot be completed until the latter part of next week.

The Alford Oil Co. will start a test on the C. C. Mills tract adjoining the townsite of Bazette on the west. It is a couple of miles north of the two wells already being drilled.

The Wortham Field has 275 producing wells now making close to 83,000 bbls. a day. There are a score or so of operations yet to be completed. Wortham will not have more than 300 oil wells when the entire producing streak has been drilled up.

Recent Wortham Completions

Recent completions in the Wortham Field include the following wells:

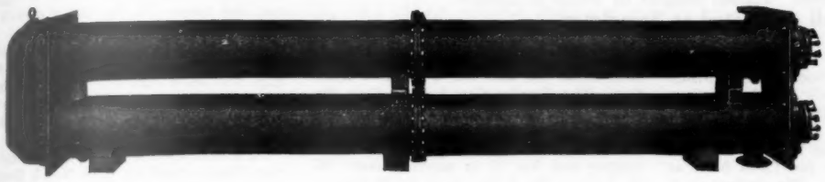
The Texas Co.'s No. 4 S. T. Bounds, sand at 2,960-82 feet, pumping 250 bbls.

Atlantic Oil Producing Co.'s No. 2 Edwards, sand at 3,014-27 feet, pumping 100 bbls.

Barclay & Meadows, No. 2 Bonner,

(Continued on Page 96)

For efficient heat exchange in absorption type gasoline plants



The G-R Mineral Seal Oil Heat Exchanger is designed so that the saturated and unsaturated oils flow through the heater in opposite directions, resulting in maximum rate of heat exchange.

There are several other practical service advantages that also help to explain the rapidly increasing popularity of this exchanger. Because of its twin arrangement, it is exceptionally compact and easy to inspect, clean, and transport to new locations if desired. All oil connections are at the same end to simplify piping. The construction eliminates expansion strains and likelihood of leakage or breakage.

These advantages and the features of construction of the G-R Mineral Seal Oil Heat Exchanger are explained in Form 207. Send the coupon for a copy.

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Philadelphia	Chicago	St. Louis	San Francisco
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Heat Transfer Apparatus

Note these other G-R units for lower refining costs

G-R Sectional Condenser

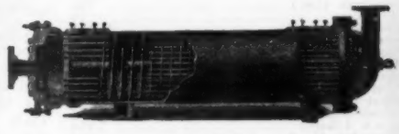
for condensing hydrocarbon vapors and other vapors

Can be used either as a standard or reflux condenser. The sectional arrangement permits using as a condenser and heat exchanger in one set or to obtain a different cut from each section. Described in Form 198.

G-R Vaneflo Gas Cooler

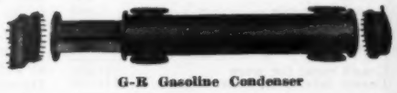
for cooling casinghead or natural gas.

Can be used as inter-, after-, or pre-cooler in absorption and compression type natural gasoline plants. Has low pressure loss and exceptional efficiency. Described in Form 208.



G-R Jacket Water Cooler

uses any source of raw water to cool the jacket water from oil and gas engines and compressors. The famous Multiwhirl Cooler—over 2,000 in operation in every liquid cooling service. Described in Form 209.



G-R Gasoline Condenser

for condensing natural gasoline vapors in casinghead gasoline plants.

Can also be used as a knockout box or fractionating tower control section with particularly close control of the end points. Described in Form 210.

G-R Twin Heat Exchanger

for the efficient interchange of heat between crude oil feed stock and still bottoms, cold water and hot oil, feed stock and hot still vapors, etc. Described in Form 201.

THE GRISCOM-RUSSELL COMPANY
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- ☐ G-R Sectional Condenser
- ☐ G-R Vaneflo Gas Cooler
- ☐ G-R Jacket Water Cooler
- ☐ G-R Gasoline Condenser
- ☐ G-R Twin Heat Exchanger

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Company .....

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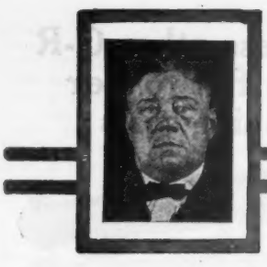

Gulf Coast Oil Operations

By P. L. McGreal

Considerable new work starting in Gulf Coast fields with new production in February greater than any time since early last year. South Liberty Pool not regarded as menace to crude situation. Initial output of wells in Southwest Texas showing decline. Good well completed at Spindletop.

HOUSTON, Tex., Mar. 2.—The estimated daily average gross production in the Gulf Coast Pools for the week ending February 28, is placed at 72,920 bbls. against an estimate of 73,710 bbls. last week. Completions in the new South Liberty Pool bring the average for the week up to 1,850 bbls., but it is offset by declines in the Hull, Orange and Goose Creek districts.

The estimate for the southwest fields is placed at 44,500 bbls., compared with 44,760 bbls. last week. The estimate for each district is as follows:

District—	Gross Bbls.
Batson	1,505
Blue Ridge	765
Barber Hill	115
Dayton	45
Damon Mound	1,230
Edgerly (La.)	670
Goose Creek	8,750
Humble	4,800
Hull	15,250
Jennings (La.)	950
Markham	90
Orange	10,500
Pierce Junction	950
Spindletop	1,010
Saratoga	1,490
Sour Lake	4,100
Vinton (La.)	5,640
West Columbia	12,300
Welsh-Anse La Bute (La.)	80
South Liberty	1,850
Lockport (La.)	620
Miscellaneous	310
Total	72,920
Southwest Fields—	
Southwest Fields	
Luling	29,250
Laredo	4,125
Somerset	2,585
Callihan	350
Rockdale-Minerva	440
Jim Hogg County	7,750
Total	44,500
Grand total for week	117,420
Grand total last week	118,470
Decrease	1,050

Gulf Coast Completions

Fourteen wells were completed in the Coastal region during the week, with 2,818 bbls. initial output. One was a dry hole, three saltwater wells and one a gasser. Nine holes are bailing. In the southwest fields the completions numbered six, with 2,250 bbls. new output.

The monthly report for February will be a surprise to many, reflecting $2 oil. The new production on the Coastal pools alone exceeds 17,000 bbls., which is the greatest amount since early last year. The Hull Pool contributed over 4,300 bbls. of the total and the Orange district added over 7,400 bbls. The new South Liberty Pool chipped in 2,700 bbls. Every pool shows an increasing number of rigs in operation. Contractors and operators who have been absent from the Gulf Coast region for years are coming back, so that there is no scarcity of rigs. In fact, there is a possibility that production will be increased beyond requirements for heavy gravity Grade A crude and the advance in the market checked. The Gulf Coast is noted for being a "feast or a famine" proposition. In other words, production is either below requirements, or so far in excess that it becomes unprofitable to produce. A few big wells soon result in an increase in stocks with a consequent decline in prices.

South Liberty No Menace

Operators are agreed that the new South Liberty Pool thus far does not constitute a menace to crude prices. The completions to date all are in a group on the northeast flank of the salt mass and well is only 26 feet southeast from Mills the initial flow has been disappointing.

The Oxford Oil Co.'s No. 1 Harrison in the South Liberty Pool was completed Wednesday at 3,454 feet, flowing initially 900 bbls. The Vacuum Oil Co.'s No. 1 Barrett shows for 1,000 bbls. at about the same depth. The Oxford Co.'s Bennett's No. 1-B Pickett, but the difference in formations is surprising. The discovery well, the Winifree Oil Co.'s No. 1 Pickett got 8 feet of sand at 3,420 feet. It came in New Year's day rated from 400 to 800 bbls. It is now making 250 bbls. M. Bennett's No. 1-B Pickett, the second completion set screen in 40 feet of sand at 3,316 feet. The Oxford Oil Co.'s No. 1 Harrison, the third completion, drilled through 140 feet of rock, where the other two got the pay and then into sand at 3,454 feet. The gravity is from 22.8 to 23 Baume, which is regular Coastal Grade A.

Completions during the coming week should be the Gulf Production Co.'s No. 1 Van de Venter, drilling around 3,075 feet and Mills Bennett's No. 2 Pickett, drilling below 3,375 feet. The Bashara Oil Co.'s No. 1 E. Pickett is around 3,300 feet and should be finished during the week.

Other wells drilling in the pool are: Mills Bennett's No. 3 Pickett at 3,000 feet and No. 1 Rivere at 455 feet. The Humble Oil & Refining Co.'s No. 1-B Rivere at 2,985 feet and No. 1 Pickett at 2,765 feet. No. 1 Chambers is below 2,600 feet. The Vacuum Oil Co.'s No. 2 Barrett is at 565 feet and No. 1 Rivere at 986 feet. The Oxford Oil Co.'s No. 2 Harrison is at 1,255 feet. Derricks are up for Bashara Oil Co.'s Nos. 2, 3 and 4 E. Pickett. The Monarch Oil & Refining Co.'s (Peer Oil) No. 1 Harrison, is at 2,465 feet with No. 2 below 975 feet. The Hofer Oil Co.'s No. 1 Pickett is at 2,980 feet. The Esperson Oil Co.'s No. 1 Baldwin is drilling around 1,655 feet. F. M. Long's No. 1 Andrews is at 1,655 feet. The Sun Oil Co.'s No. 1 Shade is at 655 feet. The Texas Co.'s No. 1 Monroe is rigging. The Gulf Production Co.'s No. 1 Mecom-Speer is at 1,234 feet and same company's No. 1 John Hamman is rigging.

In the Hull Pool

In the Hull Pool, the Mecom Oil Co.'s No. 7 Mecom is pumping 100 bbls. at 2,950 feet after working over. The Republic Production-Houston Oil Co.'s No. 56 Dolbear, a workover, is making 50 bbls. at 2,540 feet. Their No. 103 Dolbear is bailing at 2,140 feet.

The Republic-Houston Oil Co.'s No. 6 and 97 Dolbear are working over. Locations have been made for Nos. 104 and 105. The Humble Oil & Refining Co.'s No. 10 Guedry is at 3,435 feet, and No. 1 Merchant is at 4,011 feet. The Gulf Production Co.'s No. 17 Hannah and No. 1 Stengler are rigging. No. 20 Morris-Phillips is drilling at 2,455 feet. No. 12 Baldwin fee is at 2,135 feet. No. 15 Scarborough is at 3,670 feet. Nos. 14 and 30 Phoenix are working over. No. 46 Phoenix is at 3,245 feet and No. 47 at 2,415 feet.

The Eagle Point Oil Co. is rigging No. 3 Wheelock. The Higgins Oil & Fuel Co. is fishing in No. 4 Taylor at 3,655 feet. The Texas Co.'s No. 1 Hannah is at 2,325 feet and No. 2 Hannah is around 455 feet. The Yount-Lee Oil Co.'s No. 5 Stengler is at 3,155 feet and No. 6 is below 2,435 feet. The Empire Gas & Fuel Co.'s No. 16 Barngrover is at 3,235 feet. The Houston Production Co.'s No. 8 Taylor is drilling around 3,025 feet. No. 9 is rigging and No. 11 is working over. W. B. Flynn's No. 3 Ray is at 2,343 feet.

Orange Pool Operations

In the Orange Pool, the Sun Oil Co.'s No. 6 Gunstream is bailing at 4,500 feet. The Gulf Production Co.'s No. 2 Hammam-Consolidated is a salt water well at 5,130 feet.

The Gulf Production Co.'s No. 17 Lee Hager is drilling deeper at 3,875 feet. No. 4-A Chesson is at 4,455 feet. No. 9-A Kishi-Lang is around 2,765 feet. No. 2 Granger is at 1,344 feet. No. 3 Jaher-Moore is deepening at 3,200 feet and No. 4 is rigging to drill deeper. No. 1 Granger is at 2,655 feet. The Rycade Petroleum Co.'s No. 5-A State land in Cow Bayou is at 3,345 feet. No. 2-C State land is around 4,200 feet. The Humble Oil & Refining Co.'s No. 9-B Chesson is at 2,765 feet. No. 21 is at 4,980 feet. The Mutual Oil Co.'s No. 4 Chesson is deepening. No. 7 is around 4,675 feet. A derrick is standing for No. 14.

The Sun Oil Co.'s No. 3 Brown is at 4,355 feet. The Orange Petroleum Co.'s No. 8 Chesson is at 4,475 feet. No. 9 Winifree is idle. The Monarch Oil & Refining Co.'s (Peer Oil) No. 5 Gallier is drilling below 3,023 feet. The Sinclair Oil & Gas Co.'s No. 4 Granger is at 3,380 feet. The Atlantic Oil Producing Co.'s No. 3 Moore is at 3,345 feet.

At Goose Creek

In the Goose Creek Pool, the Humble Oil & Refining Co.'s No. 1 Hog Island is bailing at 4,030 feet; No. 60 Smith is blowing dry gas at 4,200 feet. The Sun Oil Co.'s No. 5 Wright is a 15-bbl. pumper at 2,500 feet. The Copeland Oil Co.'s No. 5 Bryan is a water well at 3,230 feet. The Southern Exploration Co.'s No. 2 Wright is bailing at 2,575 feet. The Gulf Production Co. is bailing No. 1 Hirsch at 4,450 feet and No. 4-A Wright at 2,600 feet.

The Gulf Production Co.'s No. 10-A Galliard is rigging to work over, as is No. 32 State land. No. 2 H. Busch is working over at 2,155 feet. No. 30 Beaumont is drilling at 655 feet. No. 3 Paddock is at 1,875 feet. No. 17 Galliard fee is rigging. No. 18 is at 4,375 feet. The Humble Oil & Refining Co.'s No. 63 Smith is drilling at 1,655 feet. The Gulf Coast Oil Co.'s No. 31 Galliard is working over. The Sun Oil Co.'s No. 2 Wright is working over. The Inca Production Co.'s No. 2 Duke is shut down on account of litigation. The Hisgen Petroleum Co.'s No. 2 Busch is below 4,335 feet. The Southern Exploration Co.'s No. 9 Wright is drilling at 1,576 feet and No. 10 is around 1,843 feet.

In Other Pools

In the Spindletop Pool, the Gulf Co. got one of the best wells of the week. It is No. 211 Gladys, pumping 225 bbls. at 900 feet. The Williams Oil Co.'s No. 1 Gladys is an 8-bbl. pumper at 725 feet. Ellis and Lancaster's No. 1 Lawrence is bailing at 860 feet.

The Gulf Production Co.'s No. 212 Gladys is drilling at 677 feet. The Baker Oil Co.'s No. 11 White is at 870 feet. The Stella Oil Co.'s No. 7 McFadden is rigging, as is the Unity Oil Co.'s No. 43 National.

In the Saratoga Pool, the Gulf Production Co.'s No. 23 BBBC is pumping 25 bbls. at 880 feet and the Sun Oil Co.'s No. 58 Texas is bailing at 950 feet.

The Rio Bravo Oil Co.'s No. 3 Bryant is showing oil at 2,680 feet. The Regna Oil Co.'s No. 1 Petty is at 986 feet. Paggi Brothers Oil Co.'s No. 6 Lewis is shut down. The Skinner Oil Co.'s No. 1 Hooks is rigging. The Gulf Co. is rigging No. 24 BBBC.

In the Batson Pool, the Gulf Production Co.'s No. 162 Wing is at 855 feet. S. R. Buchanan's No. 81 Milhome is at 1,433 feet. The Paraffine Oil Co.'s No. 38 fee is drilling at 788 feet. The Ada Belle Oil Co.'s No. 90 Davis is rigging and the Acorn Oil Co. has a derrick up for No. 53 Paraffine.

At Blue Ridge, the Gulf Production Co.'s No. 10-C Blakely is at 2,176 feet. Rigs are being placed for No. 3 Invisible and No. 8 Luscher. The Texas Co.'s No. 12 E. Robinson is deepening at 3,845 feet.

At Pierce Junction, the Texas Exploration Co. is working over No. 7 Dooley; the Gulf Production Co.'s No. 2 Cain; and Snowden and McSweeney, No. 8 Cain.

At Markham the Rycade Petroleum Co.'s No. 2 Gray is around 3,100 feet and at Barber Hill, S. J. Hindman and others' No. 1 Collier is around 1,900 feet.

At Big Creek, the Gulf Production Co.'s No. 171 Davis is drilling at 3,023 feet. No. 18 Davis is at 2,435 feet. Rigs are in for Nos. 19 and 20. No. 9 Wheat is at 3,120 feet. The Texas Co.'s No. 1 Lingua is around 2,545 feet.

The Texas Co. is bailing No. 8 House, on the north side of the river in the Humble Pool, after working it over. It shows for a nice well.

South Louisiana

In the Vinton Pool, the Vinton Petroleum Co.'s No. 1 Gray was abandoned in saltwater at 2,725 feet.

The Gulf Refining Co.'s No. 23 Star is working over at 2,130 feet. No. 27 Star is drilling around 2,135 feet. No. 61 G. N. G. is at 1,245 feet. No. 38 Vincent is idle. The Vinton Petroleum Co.'s No. 6 Rescue is at 2,375 feet. No. 14 Harmony is drilling at 2,760 feet No. 15 Vincent is at 2,045 feet. The Texas Co.'s No. 1-B Gray is at 4,045 feet and No. 2-A Gray around 345 feet. The Sun Oil Co.'s No. 3 Johnson is at 4,155 feet. The Seiss Oil Co.'s No. 5 Green is at 2,124 feet. Marrs McLean's No. 5 Gray is at 3,325 feet and fishing. The Edgerly Petroleum Co.'s No. 2 Lizzo is working over. No. 3 Vincent is drilling at 2,267 feet.

In the Jennings Pool, the Coastal Fuel Oil Co.'s No. 88 fee is pumping 250 bbls. at 1,675 feet and Hines and others' No. 9 Producers is a 20-bbl. pumper at 1,625 feet.

The Gulf Refining Co.'s No. 34 Jennings-Clement is drilling at 2,745 feet. The Foxman Oil Co.'s No. 1 Trussell is rigging.

In the Lockport district, the Vacuum Oil Co. is drilling No. 2 Miller and the Marland Oil & Refining Co. No. 1 Union.

Southwest Fields

It would appear as if the head is off the Jim Hogg County Pool and the days of big wells there are numbered. The completions this week are all swabbing propositions. The Plateau Oil Co.-T. P. Coal & Oil Co.'s joint No. 6 Holbein ranch is swabbing 500 bbls. at 1,998 feet. The Witherspoon Oil Co.'s No. 4 Holbein is swabbing 600 bbls. at 1,998 feet. and No. 5 Holbein 300 bbls. at 2,008 feet. O. W. Killiams' No. 3 Martines is swabbing 300 bbls. at 1,993 feet and the Magnolia Petroleum Co.'s No. 3 Thompson is swabbing 150 bbls. at 2,050 feet.

Scarcity of water is interfering with drilling in Jim Hogg and Webb Counties.

In the Los Ojulas Pool in Webb County, the Wheatley Oil Co. is deepening No. 14.

In Jim Hogg County, the Plateau Oil & Gas Co.'s No. 2 set casing at 1,990 feet. Casing was set in No. 3. No. 4 is drilling. No. 5 is a derrick and casing was set at 1,990 feet in No. 6. The Big Bend Oil & Gas Co.'s No. 5 Martines set casing at 1,900 feet. No. 6 is drilling around

(Continued on Page 96)

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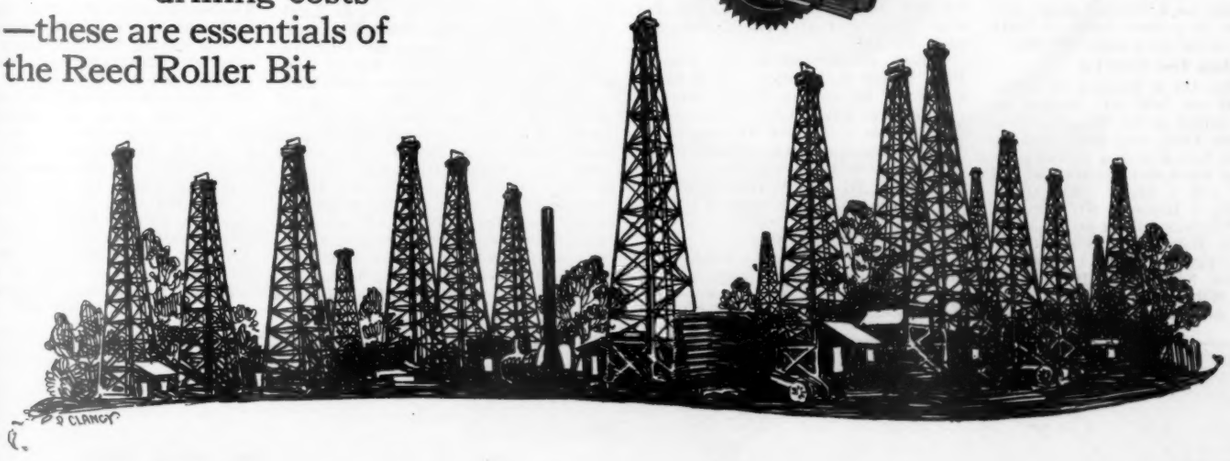


Reed Roller Bit Company

HOUSTON

NEW YORK LOS ANGELES

Oklahoma Field Operations

By C. D. Lockwood

Completion in Hughes County starts at rate of 545 bbls. Output of deep sand area of Tonkawa Field declining rapidly. Deep test in Cromwell Field held up by water. Production of discovery well in Masham Pool shows big decrease on account of water breaking in. State's output drops.

The Dixie Oil Co. has made a find in Hughes County that makes that part of the State look more interesting from a standpoint of future production. Its new well southeast of Yeager made 545 bbls. during 24 hours on Sunday and Monday with the hole 14 feet in the sand. The Shaffer Oil & Refining Co.'s deep test in the Cromwell Field still remains an unknown quantity, as water broke in under the casing, and the owners have not been able to test the good show which was obtained from the Wilcox sand. In the Masham Pool, Pawnee County, the discovery well was half full of water, production falling off to about 65 bbls. a day, The Tonkawa Field, in Kay and Noble Counties, had a new well, while production was declining rapidly. Several completions were made in the Papoose Pool, in Okfuskee and Hughes counties, although its production was lagging behind Cromwell's output.

Oklahoma's biggest and best producing fields seem to lie in a line running southeast and northwest, from the Tonkawa Field in Kay County, to the Cromwell and Papoose fields. The Dixie Oil Co.'s No. 1 Irvine, SW cor. NW SE, Section 18-10-8, which has been attracting a considerable amount of attention recently, is located on this trend. The well is on a 60-acre tract which was paid the Dixie Oil Co. by the Gladys Belle Oil Co., which originally had 140 acres in the southeast quarter of the section, for drilling the test. Sand was reached at 3,340 feet, and when 2 feet in gauged 130 bbls. in six hours. At 3,348 feet the well made 394 bbls. on a 24-hour gauge, and when drilled to a total depth of 3,354 feet, 14 feet in the sand, made 545 bbls.

Deep Test Held Up

The Shaffer Oil & Refining Co.'s No. 1 Little, SW cor. NW NE, Section 10-10-8, which drilled to the Wilcox sand in the Cromwell Field, was being held up due to water having broken in under the 5-inch casing which was underreamed and being reset with a packer. The Gypsy Oil Co.'s No. 6 Replogle, SW cor. SE, Section 9-10-8, was drilling at 3,685 feet, going to the Wilcox sand. The Carter Oil Co. was rigging up No. 1 McMahon, NW cor. SW NE, Section 10-10-8, also to test the Wilcox.

Donahoe and others' No. 1 Zoldoskie, the discovery well at Masham, Pawnee County, was declining very rapidly, from 335 bbls. on February 16, to 65 bbls. on February 26. The bailer was run and it was found that the hole was about half full of water. Efforts were being made to locate the source of the water, which was thought by many to be coming from behind the casing.

The Comar Oil Co.'s No. 3-W Gaume, C SW NW NE, Section 2-24-1w, in the southeast end of the Tonkawa Field, was making 500 bbls. from sand at 3,971-4,108 feel.

The Comar Oil Co.'s No. 1 Fitzgerald, C SE SW NE, Section 1-26-2w, in the Hubbard Pool, Kay County, was making 600 bbls. of oil with 20 per cent water.

The Cosden Oil & Gas Co.'s No. 1, NE cor. Section 21-10-9, Okfuskee County, topped sand at 3,100 feet, where it made 40,000,000 feet of gas, going out of sand at 3,140 feet.

The Prairie Oil & Gas Co.'s No. 1, NE cor. NW, Section 3-14-5, at Davenport, Lincoln County, topped sand at 3,401 feet, and at 3,431 feet was making 500 bbls. daily.

The Cumberland Oil Co.'s No. 2 Friday, NW cor. SE SW, Section 22-15-10, Creek County, was making 150 bbls. after a 120-quart shot. A location has been staked for an offset, No. 2 Snyder, NW cor. Section 27-15-10.

The Carter Oil Co.'s No. 13, SW cor. SE SE, Section 16-26-6, in the Burbank Field, was completed for 315 bbls. after a shot of 120 quarts at 2,916-64 feet. The Phillips Petroleum Co.'s No. 14, C NE NW NE, Section 18-27-6, was shot with 180 quarts at 2,922-93 feet, and made 180 bbls.

Recent completions in the Papoose Field include T. B. Slick's No. 5 Sands, C NE SW SE, Section 35-10-9, 600 bbls. from sand at 3,328-40 feet; same owner's No. 7 Sands, C NW SE SE, Section 35-10-9, 50 bbls. from sand at 3,340-50 feet; Mid-Continent Petroleum Corp.'s No. 1 Carbage, C SE NE SW, Section 35-10-9, 50 bbls. an hour from sand at 3,313-27 feet.

Completions

During the week ended February 21 there were 58 locations made, and 228 new rigs completed. Drilling wells numbered 806, while there were 249 shut down. There were 86 wells completed, of which 7 were gassers and 25 dry. The completed oil wells made a combined initial production of 21,890 bbls. Flush production of wells producing but not completed was 12,022 bbls.

Production of Fields

Production as of February 28 was for Cromwell, 37,775 bbls.; Papoose, 31,455 bbls.; Tonkawa, 88,565 bbls., of which the deep wells made 68,815 bbls.

Production of some of the other Oklahoma fields averaged for the week ending February 25 as follows:

Field—	Wells	Bbls.
Burbank	1,671	56,706
Stroud	69	3,208
Otoe	12	9,163
Tonkawa	747	97,067
Braman	8	2,317
Wewoka	103	11,500
Papoose	117	34,072
Cromwell	297	38,643
S. Weleetka	20	2,264

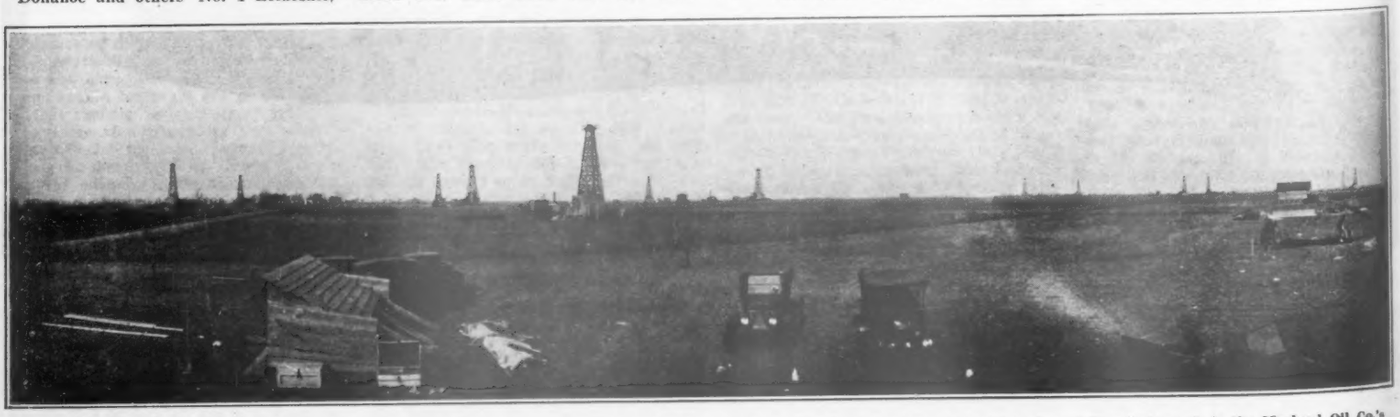
In a story on the Watchorn Pool, published in The Oil and Gas Journal last week, the writer gave credit for the opening of the deep pay sand to the Magnolia Petroleum Co. in its No. 2 Robedeaux. This should have been the Watchorn Oil & Gas Co.'s No. 3 George L. Miller, which was the first producing oil well in the 2,700-foot sand on June 10, 1922, and was deepened to the Wilcox sand at 4,117 feet on October 9, 1923.

In the Cromwell Field

The Sinclair Oil & Gas Co.'s No. 1 Pierce, C SE SE SE, Section 33-11-8, in the Cromwell Field, was completed with sand at 3,341-3,418 feet, making 3,386 bbls. daily. The same company's No. 2 Pierce, C SW SE SE, Section 33-11-8, was completed with sand at 3,326-3,404 feet, total depth 3,405 feet, making 720 bbls. The Carter Oil Co.'s No. 2 Dunn, C NW SW NW, Section 3-10-8, was completed with sand at 3,369-3,339 feet, making 1,260 bbls. The Cosden Oil & Gas Co. had sand from 3,436-70 feet, in No. 11 Toney, C SW SW SW, Section 4-10-8, and was making 90 bbls. on the swab. The Sinclair Oil & Gas Co.'s No. 2 Clark, C SE NW NE, Section 4-10-8, was making 45 bbls. and 20,000,000 feet of gas from sand at 3,388-3,476 feet. No. 3 Clark, C SW NE NE, Section 4-10-8, was completed with sand at 3,396-3,444 feet, making 550 bbls.; No. 5 Clark, C NE NW NE, Section 4-10-8, 615 bbls. from 3,322-3,411 feet; No. 5 Clark, C NE NE NE, Section 4-10-8, sand at 3,372-3,469 feet, 1,000 bbls. The Southwestern Petroleum Co.'s No. 5 Jackson, C NE NE NW, Section 4-10-8, was making 200 bbls. from sand at 3,312-3,396 feet; No. 6 Jackson, C NW NE NW, Section 4-10-8, 240 bbls. from sand at 3,324-82 feet; No. 7 Jackson, C SW NE NW, Section 4-10-8, completed with sand at 3,342-3,438 feet, 2,400 bbls. The Waite Phillips Co.'s No. 8 Dunn, C NE NE SE, Section 4-10-8, was completed with sand at 3,362-3,339 feet, making 200 bbls. daily.

The Prairie Oil & Gas Co.'s No. 13 Buckner, C SW NE SE, Section 8-10-8, was swabbing 35 bbls. from sand at 3,462-3,518 feet. The Carter Oil Co.'s No. 2 Hall, C SW NW NW, Section 9-10-8, was making 15 bbls. of oil and 250,000 feet of gas when completed with sand at 3,436-83 feet; No. 3 Hall, C SE NW NW, Section 9-10-8, 10 bbls. from sand at 3,450-86 feet; No. 4 Hall, C NW NE NW, Section 9-10-8, 10 bbls. at 3,460-3,505 feet, no increase after a 15-quart shot. The Pure Oil Co.'s No. 3-A Brunner, C SW SE SE, Section 9-10-8, was completed with sand at 3,380-3,460 feet, and was making 75 bbls. naturally. The Carter Oil Co.'s No. 4 Hill, C NE NW NW, Section 10-10-8, was completed with sand at 3,344-80 feet, making 30 bbls. naturally. The same company's No. 2 Little, C SW SW NE, Section 10-10-8, topped sand at 3,323 feet, and was shut down at 3,407 feet making 2,000,000 feet of gas and no oil. The Houston Oil Co.'s No. 2 Harjo, C SE NE SE, Section 15-10-8, had sand at 3,528-64 feet, with water at 3,562 feet; it made 70 bbls. naturally when plugged back 2 feet. The Tidal-Osage Oil Co.'s No. 3 Harjo, C SE NE NE, Section 21-10-8, was completed with sand at 3,420-60 feet, and was making 40 bbls. naturally.

The Carter Oil Co.'s No. 3 Dunn, C SW NW NW, Section 3-10-8, topped sand at 3,373 feet, first oil at 3,380 feet, and at 3,436 feet was making 1,300 bbls. The Roxana Petroleum Corp.'s No. 2 Yarhola, C NW SE SW, Section 3-10-8, was completed with sand at 3,315-55 feet, total depth 3,470 feet, making 100 bbls. daily. The Cosden Oil & Gas Co.'s No. 8 Toney, C NW NW SW, Section 4-10-8, was completed making 400 bbls. from sand at 3,414-40 feet. The Sinclair Oil & Gas Co.'s No. 4 Clark, C SE NE NE, Section 4-10-8, had sand at 3,390-3,465 feet, and was making 1,200 bbls. The Southwestern Petroleum Corp.'s No. 5 Wisner, C NE SE NE, Section 4-10-8, was making 935 bbls. naturally from sand at 3,386-3,465 feet. The Waite Phillips Co.'s No. 5-A Dunn, C NW NW SE, Section 4-10-8, was swabbing 6 bbls. a day from sand at 3,442-3,512 feet. The Tidal-Osage Oil Co.'s No. 2 Baker, C SE NW NE, Section 8-10-8, was making 20 bbls. on the swab at 3,427-75 feet. The Carter Oil Co.'s No. 2 Little, C SW SW NE, Section 10-10-8, was swabbing 25 bbls. from sand at 3,436-65 feet. The Roxana Petroleum Corp.'s No. 1 Curley, C SW NW SW, Section 14-10-8, had sand at 3,545-75 feet, and was good for 400 bbls. Snowden & McSweeney's No. 1, C SW NW NW, Sec-



The Hubbard Pool, northwest of Tonkawa Field, in Kay County. The derrick located about an inch and a quarter from the right edge of the photograph is the Marland Oil Co.'s No. 1 Fitzgerald, discovery well of the 2,700-foot sand. The four derricks on the left are the big gas wells on the North, Hubbard, Hockstetter and Smith "A" leases, the first three of which are Marland's, and the fourth belonging to the Prairie Oil & Gas Co. In the foreground is the Prairie's No. 2 Smith "A."

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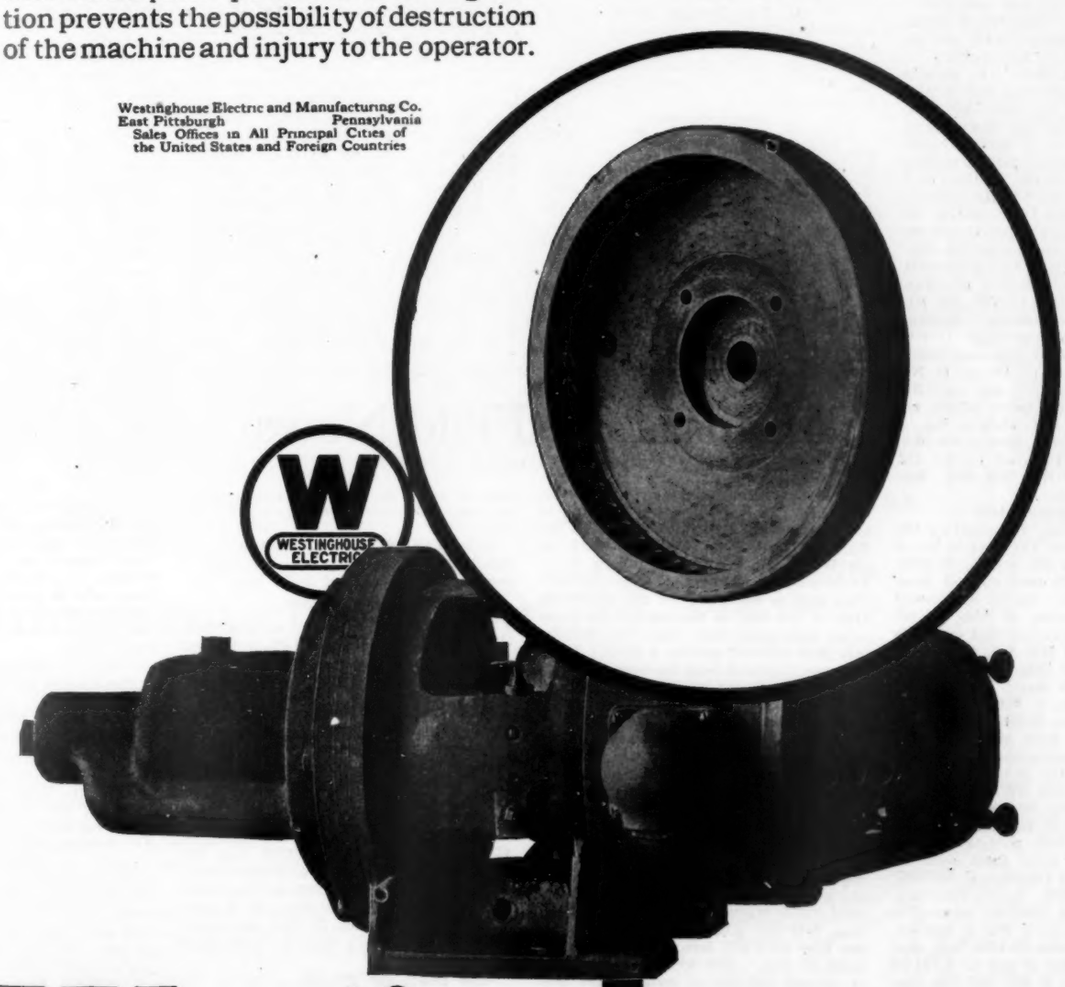

Westinghouse

tion 14-10-8, was good for 390 bbls. after a 40-quart shot at 3,528-3,600 feet.

Cromwell Drilling Operations

New and drilling operations include Continental Oil Co.'s No. 4 Pierce, C NW SE SE, Section 33-11-8, spudding in; No. 5 Pierce, C SW NW SE, Section 33-11-8, spudding in; Pure Oil Co.'s No. 3 Jackson, C SE SW SW, Section 33-11-8, drilling at 275 feet; No. 4 Jackson, C NE SE SW, Section 33-11-8, drilling at 1,000 feet; Phillips Petroleum Co. and Cosden Oil & Gas Co.'s No. 2 Brown, C NE NE SW, Section 33-11-8, spudding in; Sinclair Oil & Gas Co.'s No. 4 Pierce, C NE SE SE, Section 33-11-8, drilling at 600 feet; No. 5 Pierce, C NW NE SE, Section 33-11-8, drilling at 250 feet; McMan Oil Co.'s No. 1 Hill, C SW SE SW, Section 34-11-8, drilling at 725 feet; No. 2 Hill, C NW SE SW, Section 34-11-8, drilling at 290 feet; Sinclair Oil & Gas Co. and Gardner Petroleum Co.'s No. 4 Hill, C NW NW SW, Section 34-11-8, drilling at 500 feet; No. 6 Hill, C NE SW SW, Section 34-11-8, drilling at 250 feet; Sinclair Oil & Gas Co.'s No. 1 Jackson, C SW SW NW, Section 34-11-8, drilling at 225 feet; Carter Oil Co.'s No. 6 Dunn, C NW NW NW, Section 3-10-8, drilling at 700 feet; No. 7 Dunn, C SE SE NW, Section 3-10-8, drilling at 300 feet; No. 8 Dunn, C NE NW NW, Section 3-10-8, drilling at 325 feet; Nowata Oil & Refining Co.'s No. 1 Price, C SW NW NE, Section 8-10-8, rigging up; Prairie Oil & Gas Co.'s No. 1 Hill, C SW SW NE, Section 3-10-8, drilling at 200 feet; Southwestern Petroleum Co.'s No. 1 Little, C NW NW SE, Section 3-10-8, drilling at 200 feet; Sinclair Oil & Gas Co.'s No. 1-A Fixico, C SE NE SE, Section 5-10-8, drilling at 200 feet; Denver Oil & Refining Co.'s No. 1 Low, C SE SE NW, Section 6-10-8, drilling at 200 feet; Cosden Oil & Gas Co.'s No. 4 Yarhola, C SE SW SE, Section 15-10-8, rig abandoned; No. 5 Yarhola, C SW SE SE, Section 15-10-8, rig abandoned; Roxana Petroleum Corp.'s No. 3 Tiger, C SW SE NE, Section 15-10-8, rig abandoned; Carter Oil Co.'s No. 10 Dunn, C NE SW NW, Section 3-10-8, rig up; No. 11, C SE NW NW, Section 3-10-8, rig up; Roxana Petroleum Corp.'s No. 3 Curley, C NW NW SW, Section 14-10-8, rig up; Tidal Oil Co. and Carter Oil Co.'s No. 2 King, C NW SW NW, Section 14-10-8, rig up.

In the Papoose Field

The Indian Territory Illuminating Oil Co. and the Barnsdall Oil Corp.'s No. 4 Williams, C NW SE SE, Section 34-10-9, topped sand at 3,296 feet, had oil from 3,300 to 3,307 feet, where it showed water. It was making 15 bbls. of oil an hour. The Transcontinental Oil Co.'s No. 8 Tiger, C NE NE NE, Section 4-9-9, was making 20 bbls. an hour from sand at 3,292-3,305 feet. The Prairie Oil & Gas Co.'s No. 4 Vincent "A", C SW SW SW, Section 34-10-9, was pumping 100 bbls. daily from sand at 3,298-3,319 feet after plugging back from 3,424 feet. The Cosden Oil & Gas Co.'s No. 1 Carbage, C SE NE SW, Section 35-10-9, started flowing 90 bbls. an hour from sand at 3,317-23 feet. No. 2 Carbage, C SW NE SW, Section 35-10-9, made 40 bbls. an hour from sand at 3,312-19 feet. No. 3 Carbage, C SE NW SW, Section 35-10-9, made 765 bbls. daily from sand at 3,306-19 feet. The Prairie Oil & Gas Co.'s No. 3 Sawyer, C NE NE SE, Section 35-10-9, was shut in for 28,000,000 feet of gas at 3,341-53 feet. No. 4 Sawyer, C SW NE SE, Section 35-10-9, was good for 735 bbls. daily from sand at 3,341-57 feet. T. B. Slick's No. 2 Sands, C NW SW SE, Section 35-10-9, was dry and abandoned at 3,327 feet. The Josey Oil Co. and the Margay Oil Co.'s No. 1 Arbor, C NW SW NW, Section 1-9-9, was completed making 40,000,000 feet of gas and 643 bbls. of oil; the sand was topped at 3,340 feet and the oil was had from 3,352-62 feet. The Independent Oil & Gas Co.'s No. 5, C NW SW NE, Section 2-9-9, topped sand at 3,330 feet, and was making 400 bbls. of oil from 3,346-50 feet. The same company's No. 3, C SE NE NE, Section 2-9-9, topped sand at 3,341 feet and oil at 3,351 feet; it was making 25 bbls. an hour from a total depth of 3,383 feet. T. B. Slick's No. 3, C NW NE NW, Section 2-9-9, topped sand at 3,325 feet, and was making 150 bbls. with total depth 3,344 feet. The Phillips Petroleum Co.'s No. 2 Arber, C NE NE SE, Section 3-9-9, was plugged at 1,620 feet because of a bad holde. T. B. Slick's No. 4, C SE SE NE, Section 3-9-9, was making 600 bbls. from sand at 3,289-3,312 feet. The Transcontinental Oil Co.'s No. 9 Tiger, C SE NE NE, Section 4-9-9, topped sand at 3,301 feet, and at a total depth of 3,310 feet was making 700 bbls.

Papoose Drilling

New and drilling operations include Jennings Petroleum Co.'s No. 2 Barnett, C SE SE SW, Section 33-10-9, spudding in; Foster Investment Co.'s No. 1 Wallace, C SW SE NE, Section 33-10-9, drilling at 500 feet; Indian Territory Illuminating Oil Co. and Barnsdall Oil Corp.'s No. 1 Charles, C SW NW SW, Section 19-9-9, drilling at 600 feet; Indian Territory Illuminating Oil Co. and Barnsdall Oil Corp.'s No. 8 Williams, C NE NE SE, Section 34-10-9, location; same owners' No. 7 Williams, C NW NE SE, Section 34-10-9, rigging up; Independent Oil & Gas Co.'s No. 7, C SE SW NE, Section 2-9-9, spudding in at 130 feet; same company's No. 5, C NW SE NE, Section 2-9-9, drilling at 240 feet; Skelly Oil Co.'s No. 1 Carolina, C NE NW SE, Section 2-9-9, building rig; W. R. Ramsey's No. 1 Bowlegs, C NW SW SW, Section 23-9-9, rig on ground.

Osage County

A. G. Oliphant's No. 3, SE cor. SW SE SW, Section 19-25-8, in Osage County, was dry and abandoned at 1,125 feet. A. D. Simon's No. 3, C S half NE NE, Section 36-29-11, was plugged back to 990 feet from a total depth of 1,030 feet and made a 5-bbl. well after an 80-quart shot. The Owen-Osage Oil Co.'s No. 314, CSL NE, Section 31-29-12, was dry and abandoned at 1,760 feet. The Sand Springs Home's No. 7, CSL SE, Section 21-20-11, was completed with sand at 2,350-60 feet, and was pumping 20 bbls., declining from 60 bbls.; the total depth was 2,365 feet, where water was met, and was plugged back to 2,360 feet. The Sand Springs Home's No. 1, CSL NW, Section 29-20-11, topped the Bartlesville sand at 1,774-1,870 feet with 2,000,000 feet of gas and a show of oil; the 6¾-inch casing was set at 1,915 feet, and drilling resumed. The Oklahoma Natural Gas Co.'s No. 657, NE cor. NW SW, Section 29-20-12, was dry and abandoned at 2,200 feet. The Sand Springs Home's No. 83, CSL SW SW SE NW, Section 29-20-11, was completed as a gas well for 4,000,000 feet with pay sand at 1,936-51 feet.

New operations in Osage County include E. B. Lawson's No. 12, CWL NW, Section 28-25-8, rig up; The Texas Co.'s No. 13, SW cor. NW SW NE, Section 29-25-8, drilling at 400 feet; Indian Territory Illuminating Oil Co.'s No. 2, NE cor. NW, Section 34-29-11, spudding in; Olean Petroleum Co.'s No. 4, CSL SE NW SE, Section 19-25-9, timbers; Rex Pyramid Oil Co.'s No. 1, SE cor NE, Section 29-24-10, spudding in; Peters Petroleum Corp.'s No. 8, NE cor. SE NE NE, Section 33-24-10, machine; Alcorn Oil Co. and others' No. 2, CEL SW, Section 24-21-9, moving in material; Sand Springs Home's No. 84, SE cor. NW SW, Section 24-21-9, drilling at 1,700 feet; Breene, Markham & McKinney's No. 4, SE cor. SW SE NE, Section 22-21-10, rig on ground; Titus, Norris & Bird and the Tidal-Osage Oil Co.'s No. 5, NE cor. NW NE NE, Section 23-21-10, rig on ground; Breene, Markham & McKinney's No. 11, SW cor. NE SW NW, Section 23-21-10, drilling at 400 feet; Gillespie and others' No. 14, SW cor. NW SW SE, Section 31-21-12, rig up; Sand Springs Home's No. 1, NE cor. NW NE NE, Section 22-20-11, drilling at 200 feet; Gray Oil Co. and others' No. 7, CWL SW NE NE, Section 28-20-11, spudding in; Sand Spring's Home's No. 2, SE cor. NE SE SW, Section 32-20-11, drilling at 700 feet; Barnsdall Oil Corp.'s No. 11, C S half SE SE, Section 5-20-12, rigging up; R. G. Gillespie's No. 24, NE cor. NW NE NE, Section 8-20-12, rigging up; Winona Oil Co.'s No. 20, CWL SW SW NE, Section 9-20-12, drilling at 300 feet; Barnsdall Oil Corp.'s No. 26, NE cor. NE SE NW, Section 9-20-12, drilling at 190 feet; Selby Oil & Gas Co.'s No. 7, NE cor. NW NE NW, Section 16-21-12, rigging up machine; Sterling Oil & Gas Co.'s No. 3, SE cor SE, Section 16-21-12, drilling at 500 feet; Gillespie and others' No. 14, CWL SW SE, Section 31-21-12, drilling at 800 feet; Barnsdall Oil Corp.'s No. 11, CSL SE SE, Section 5-20-12, drilling at 340 feet; R. G. Gillespie's No. 24, CNL NE NE, Section 8-20-12, drilling at 670 feet.

The Red Bank Oil Co.'s No. 1, C S half NE NW, Section 29-23-8, was drilling at 200 feet. The Riverland Co. was moving in tools for No. 1, CSL NW NW, Section 10-22-10. The Twin States Oil Co.'s No. 11, C S half SE NW, Section 32-22-10, was drilling at 250 feet. The Tidal-Osage Oil Co.'s No. 39, CWL NW SE NW, Section 34-22-10, had the 8-inch casing set at 1,256 feet. The Waite Phillips Co. had a rig up for No. 1, CEL NW, Section 2-21-8.

Burbank Field

New operations in the Burbank Field include Phillips Petroleum Co.'s No. 3, CSL SW SE NE, Section 11-27-5, drilling at 250 feet; No. 4, SE cor. NE, drilling at 400 feet; No. 9, CWL SW NW SW, Section 12-27-5, drilling at 200 feet; No. 12, C SE NW SW, drilling at 400 feet; No. 11, C SW NE SW, drilling at 250 feet; Carter Oil Co.'s No. 11, CWL SW NW NE, Section 13-27-5, building rig; No. 12, CNL NE NW NE, building rig; No. 13, C SE NW NE, rig up; No. 13, CNL NW NE NW, rigged up; No. 14, NE cor. NW, rig up; No. 15, C SW, NE NW, rig up; No. 16, CEL SE NE NW, building rig; Phillips Petroleum Co.'s No. 15, CSL NW, Section 25-27-5, rig up; No. 11, C SW NE NE, Section 18-27-6, rig up; Carter Oil Co.'s No. 3, CNL NW NE, Section 20-26-6, spudding in; Phillips Petroleum Co.'s No. 2, CSL SE SW NE, Section 11-27-5, drilling at 150 feet; No. 6, C NE SW NE, drilling at 430 feet; No. 7, C NW SE NE, drilling at 640 feet; No. 10, C SE NW NE, drilling at 300 feet; No. 11, C SW NE NE, drilling at 600 feet.

Payne County

The Josey Oil Co.'s No. 3 Lee, SW cor. SE, Section 35-19-5, was making 150 bbls. from sand at 3,447-85 feet. The same owner's No. 5 Lee, SE cor. Section 35-19-5, was making 35 bbls. per hour from sand at 3,331-36 feet.

The Gar Oil Co. abandoned the rig. No. 3 Hudson, NW cor. SW SW, Section 9-19-5.

Kay County

The Comar Oil Co. had a rig on the ground for No. 1-A Kincaid, SW cor. NE, Section 21-29-1w, Kay County. The Herbert Oil Co. had a rig up for No. 1, CSL SW, Section 5-28-1w. The Vernon Oil & Gas Co. had a machine up for No. 1 Bradley, CEL NE NE SE, Section 20-29-1. The Blackwell Oil & Gas Co. had a rig up for No. 3 Kumler, CEL NE SE, Section 9-27-1w.

Grant County

The Kay Oil Co. had a rig up for No. 1-A Newcomb, SW cor. SE SW, Section 14-27-3, in Grant County. The Blackwell Oil & Gas Co. was deepening No. 2 Crouch, NW cor. Section 23-27-3w, drilling at 3,935 feet.

Pawnee County

J. B. Grieves' No. 2 Hart, SE cor. SW SW, Section 30-21-8, in Pawnee County, was dry and abandoned at 3,026 feet. Adamson and others' No. 1-A Sigan, SE cor. NW SW, Section 32-21-8, was completed with sand at 2,930-46 feet, making 65 bbls. The Cosden Oil & Gas Co.'s No. 8 school land, C SE NW NW, Section 16-20-7, was completed with sand at 2,582-2-616 feet, and was good for 100 bbls.. after shots of 10 and 20 quarts. The same company's No. 10 school land, SW cor. NW, Section 16-20-7, made 90 bbls. after shots of 10, 20 and 45 quarts. Flynn, Morgan & Shaffer's No. 1 Davis, SE cor. SW NW, Section 4-20-5, was dry and abandoned at 4,002 feet.

(Continued on Page 90)

Kansas Oil Field News

By C. D. Lockwood

Most interesting of the past week's developments in Kansas was the finding of a good show in the Wilcox sand in the Rainbow Bend Field, Cowley County, by the Waite Phillips Co. and others' No. 1 Patterson, SE cor. NE, Section 18-33-3. This well is northwest of the producing area of the field in the regular Rainbow sand, and found that sand dry, drilling into lime without getting a show. Drilling was continued with the hope of finding oil in the Wilcox sand, which is productive in the Graham Field, 3 miles northeast.

The Wilcox sand was reached at 3,574 feet, where a good show of oil was had. Drilling was stopped and the 5-inch casing set, and preparations made to pull the big pipe.

The Waite Phillips Co.'s No. 1 Johnson, NE cor. SE, Section 9-33-3, in the Graham Field, Cowley County, was making 90 bbls. of oil and 300 bbls. of water, the water coming from the bottom of the sand. The Marland Oil Co.'s No. 4 Graham, NW cor. NE, Section 9-33-3, topped the lime at 3,417 feet, and had sand at 3,513-19 feet. The well had 1,000 feet of oil and 700 feet of water in the hole. The same company's No. 3 Graham, SE cor. NE, Section 9-33-3, found oil at 3,228-30 feet, and flowed 138 bbls., after which it was put on the swab and made 112 bbls. the first 24 hours, and later started cutting 3 per cent.

The Valerius Oil & Gas Co.'s No. 3 Oswald, NW cor. Section 17-12-15w, in the Valerius or Russell Pool, Russell County, was deepened to a total depth of 9 feet in the sand which was topped at 2,936 feet, where it was holding up at 450 bbls. a day. This well extended the pool one location west, and found the sand to be coarser than in wells farther east.

During the week ended February 21, there were 55 locations staked in Kansas, and 72 new rigs up. Wells shut down numbered 155, while there were 221 drilling.

A total of 19 wells was completed, of which 6 were dry, the others making a combined production of 3,375 bbls.

Cowley County

Shawver & Sutter's No. 1 Eastman, C SW SW NW, Section 5-31-6, in Cowley County, was completed with sand at 2,844-47 feet, and was good for 40 bbls. after being shot with 15 and 25 quarts. The Empire Gas & Fuel Co.'s No. 4 Eastman, SE cor. NE SE, Section 6-31-6, was completed with sand at 2,826-40 feet, and was good for 120 bbls. initially after a 20-quart shot. Terraine & Balarie's No. 1, SW cor. SE SW, Section 29-31-6, was spudded in and shut down. The Sinclair Oil & Gas Co.'s No. 1 Spangler, C SE SE NW, Section 13-32-4, wade 624 bbls. initially from sand at 2,538-46 feet, and averaged 540 bbls. for the first week. The J. A. Hull Co.'s No. 11 Kukuk, NW cor. NE, Section 24-32-4, was swabbing 100 bbls. from sand at 2,987-3,036 feet.

The Lewis Oil Co. had a rig up for No. 5 Elliott, NE cor. NW SE, Section 31-30-6. The Carter Oil Co. was building a rig for No. 3 Waite. C NE NW SE, Section 19-32-3, and for No. 4 Waite, C SW NW SE, same section.

The Waite Phillips Co. and others' No. 3 Johnson, C SE NE SE, Section 9-33-3, in the Rainbow Bend Field, was drilling at 420 feet. No. 4 Baccus, C NW NW NW, Section 20-33-3, was drilling at 180 feet. No. 2 Johnson, C NE NE SE, Section 20-33-3, was spudding in. A rig was up for No. 3 Johnson, C SE SE SE, Section 20-33-3, and for No. 1 Caldwell, C NW NW NW, Section 28-33-3. A rig was being built for No. 2 Beebe, C NE NE NE, Section 28-33-3. No. 1

(Continued on Page 94)

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Rocky Mountain Area

By Frank B. Taylor

Gebo Dome litigation ended, soon to be drilled. Big Horn Basin becoming active. Refining firm enters producing field in Sunburst. Carter Co. well in Routt County, Colorado, has water in Dakota sand, but to be drilled to Lakota. Small companies in Salt Creek receive premium offer equaling Mid-Continent.

CASPER, Wyo., Feb. 28.—According to advices from Washington, the Gebo Dome litigation is ended and this structure is to be drilled in the near future. The Gebo Dome is a structure lying near the town of Gebo in Hot Springs County, Wyoming. It has been known as a possible oil structure for several years past and about two years ago the Gebo Oil Co. decided to drill a well there. Other claimants came forward for the tractors claimed by the Ohio Co. and that company decided not to do anything until the titles were cleared. The matter is now said to have been adjusted satisfactorily and the Ohio has several tracts on the structure. The Utah Oil & Refining Co. will start a test well on some other tracts near by. Washington advices state drilling must commence within 60 days and preparations are under way to move in equipment.

The Utah Oil & Refining Co. is a subsidiary of the Midwest Refining Co. and has been operating on the Black Mountain structure in Hot Springs County for three years. The Gebo Dome is expected to be found quite deep drilling and the sands are expected about 4,000 feet.

Grass Creek Line Frozen

The Grass Creek pipe line has been having trouble for the past week, the line has frozen up and upon investigation, it was discovered water had got into the pipe. Just where the water came in is a problem.

This pipe line is about 85 miles long. It is a gravity line, 6-inch from the field to Chatham and then 8-inch from there to Greybull. The line has never had a pump on it since it was laid in 1917. The fall between Grass Creek and Greybull is such that the oil delivers itself by gravity without trouble and as the crude is heated at the field end, no water can enter the line at that point. However as the line crosses numerous streams it is considered that when the oil has passed a crossing, a rather heavy vacuum is exerted by the flowing oil upon the pipe after the oil has passed and that this flowing oil might cause a suction at the collars where the line crosses in the beds of streams and thereby cause some water to enter that would collect at low points and cause the trouble by freezing.

The Big Horn Basin is becoming active, the Union Oil Co. of California has resumed work on the Lake Creek Dome test after being shut down during the winter. The hole is now at 850 feet and a good flow of water that is supplying all the needs of the well and camp was struck at 750 feet. The well is on Section 34-42-91.

The McPherson Syndicate is preparing to start drilling on the Little Sand Draw structure west of Kirby about 10 miles. The rig is up and the tools are now going into the location. This Little Sand Draw structure is a well defined and very nice appearing dome with the Eagle sandstone forming the escarpment on the surface; however it is only about 50 acres in area and while an excellent structure from a geological standpoint, it is too small in area to be interesting for the larger companies. The McPherson test is on Section 2-44-96.

Sand Draw Gasoline

The proposed pipe line from the Sand Draw Field in Fremont County, to connect with the Casper gas line from the Lost Soldier Field, is now considered a certainty, the laying to start this spring. This line will connect the gas wells of the Big Sand Draw structure south of Riverton, with the trunk line from the Lost Soldier to Casper and which supplies Casper with a large proportion of its gas. The link will be about 65 miles long, and will enable the Producers & Refiners to draw upon the big gas supply at Sand Draw that is much more than sufficient to supply the needs of Riverton, Lander and Hudson. The Sand Draw Gas Field in Fremont County and the Little Sand Draw Dome in Hot Springs County are different fields. The Sand Draw in Fremont County is a developed gas field supplying the towns of Riverton, Lander and Hudson and the area is owned mainly by the Producers & Refiners and Carter Oil Co. Little Sand Draw is a wildcat structure, nothing ever having been drilled there although it looks promising over a small area.

Montana Activity

The O'Neil Brothers syndicate, operating a refinery at Sunburst, Mont., has entered the Sunburst Field as an active firm in the producing end of the business. This firm has purchased the north half of Section 33-35-2 just north of the Section 4-34-2 that produced the big wells the past year and the O'Neil tract is considered one of the choice pieces in the field at present.

The Flood & Watson gasser is holding up in production and is by far the largest gas well found at Sunburst to date. This is the well that was located as a future 2,000-bbl. well by a Canadian with a "doodlebug," but it seems the machine was mixed a little and brought in a gasser instead of an oil producer. As the gas is dry and there is a sufficiency of gas for the field from the other wells, there is no market at present for the gas from the new well. The owners will try to drill deeper as soon as the pressure is under control.

Colorado Operations

The Carter Oil Co.'s well on Section 8-4-87, on the Sage Creek Dome in Routt County, Colorado, is in the Dakota sand and has water. This condemns the Dakota sand but the well is to be drilled down about 100 feet more to make a test of the Lakota sand also. The Carter Oil Co. is placing a rig for a test on Section 17-8-68 in the Fort Collins Field. This location is on the east side and north end of the Fort Collins structure and fairly well down the side, according to the older contour maps.

The Ver Stratten well of the Union Oil Co. of Cal., on Section 19-8-68 in the Fort Collins Field should have the pay sand within the next 60 feet of drilling and a control head has been placed on the casing while a Christmas tree is in readiness in case the well comes in unexpectedly. The hole is at 3,940 feet.

The Intermountain Water & Power Co. has completed its pipe line and laterals in the Salt Creek Field and the company is now supplying an average of 50,000 bbls. of water daily from the Tisdale well, 8 miles west of the field. The water has been found very acceptable to the oil operators and camps in the field and relieves the situation there.

Several of the smaller companies in the Salt Creek Field have received a premium offer that makes the price of oil from that field equal that of Mid-Continent. The Texas Co. is reported to be in the market for Salt Creek oil and being ready to pay $2 per barrel against the present quotation of $1.60. This is taken by some to mean that shortly the differential existing between Wyoming and Mid-Continent crudes will be done away with entirely.

Weekly Field Runs

Salt Creek	59,500
Teapot	2,150
Big Muddy	3,240
Grass Creek	3,220
Elk Basin	850
Greybull	30
Rock River	3,360
Lance Creek	780
Poison Spider	120
Osage	350
Hamilton Dome	760
Lander	200
Byron	60
Pilot Butte	30
Lost Soldier	5,470
Ferris	110
Cat Creek	3,655
Sunburst	3,120
Craig	1,050
Fort Collins	650
Florence	230
Artesia	750
Hogback	350
Rattlesnake	345
Miscellaneous	345
Total	89,535

News from Fields of Canada

By Victor Lauriston

CHATHAM, Ont., Mar. 2.—In the course of a visit to Alberta recently, Hon. Charles Stewart, Minister of the Interior in the Dominion Government, stated that the Canadian customs tariff on drilling machinery would be removed this year. Mr. Stewart stated that it had been the intention of the Government to remove the duty last year, but the covering clause in the tariff regulations was not interpreted by the customs department in the spirit intended, and was consequently futile. This year the wishes and intentions of the Government had been made clear to the department and the clause had been redrafted by that department to meet the requirements. The intention is to remove the duty against oil drilling machinery, as well as the duty on all casing of a diameter greater than 4½ inches. The removal of the tariff has been strongly urged for many years by oil operators, particularly in the Canadian west, where drilling is handicapped not merely by the tariff on drilling machinery but also by heavy freight rates on shipments from Eastern points. The abolition of the duty is expected to greatly stimulate drilling operations and development work in all parts of Canada.

Another measure likely to affect oil and gas development in Alberta is the reported transfer of the natural resources of that province from the Federal to the Provincial Government. Whatever the effect of the transfer, however, leases and permits already issued will not be affected.

Acquires Controlling Interest

It is officially announced that the International Utilities Corp. of New York, formerly operating under the name of Chandler & Co., has acquired control of the Canadian Western Natural Gas, Light, Heat & Power Co. of Calgary, through the purchase of a controlling interest in the stock. The Canadian Western owns and operates the pipe line supplying natural gas to Calgary, Lethbridge, Okotoks, Maclead, Claresholm, Granum and other points in southern Alberta from the Bow Island, Foremost and Monarch Fields, in which it holds extensive gas production. The company also has arrangements for utilizing the residual gas from the Turner Valley Field. The International Utilities Co. previously controlled the Northwestern Utilities, Ltd., of Edmonton, which supplied that city and intervening points from the Viking gas field, where it has 10 or more producing wells and extensive holdings of potential gas territory.

It is announced that there will be no change in the policy of the companies. The Northwestern Utilities, Ltd., will this year continue drilling operations in the Viking Field, two and possibly three new wells being put down to maintain the company's gas reserves. Similar work will be carried on to maintain the gas supply of the Calgary company, though it is intimated that the scope of the Calgary service may be increased, and that the International Utilities Co. is planning to acquire other public utility enterprises in the Canadian West.

To Deepen Well

In southern Alberta, the Rogers-Imperial test of the Canadian Oil & Refining Co. on Section 29-1-11w4 will resume drilling early this spring. The test was carried down only 13 feet last summer, but this footage being open hole has since filled in, and must again be drilled out. The well now stands at 2,538 feet and when drilling is resumed 4½-inch casing will probably be used. The test got a large flow of gas, estimated at 23,000,000 feet around the 2,500-foot horizon, and is to be carried deeper for oil, the gas being mudded off. Imperial Oil, Ltd., will utilize gas from this well for drilling its No. 2 well at Dead Horse Coulee, a mile to the north. The Dead Horse Coulee test, shut down for the winter at around 1,000 feet, will resume drilling next month. In the Quarantine reserve area, Australian interests have an option on a number of holdings of local oil companies, involving several unfinished tests, the option expiring in March.

In the Coalspur district, lying along the Alberta coal branch railway south of Edson, Imperial Oil, Utd., is reported to have taken up additional territory through the purchase at auction of leases forfeited for nonpayment of dues. The new holdings cover territory in the vicinity of Lovett and about 15 miles south of the Coalspur No. 2 test, which is still unfinished.

In northern Alberta, it is reported that the Prairie Natural Gas Co. test at High Prairie will this year be carried deeper. The test was last season carried to 2,205 feet, but owing to the numerous quicksands the hole finished at that depth with 5⅞-inch casing. The company is planning to drill the hole out with a rotary and carry it deeper.

In the Many Island Lake Field, the Community Oil Wells, Ltd., test will resume drilling early in March, with F. H. Stover of Chatham in charge of the operations. This test is down 2,470 feet, but in cleaning it out last fall a crooked hole was discovered, and a new hole had to be started from about 1,500 feet. This is now down 1,700 feet.

In the Ontario fields a wildcat test by a local syndicate on the Andrew Dorman farm, concession 7, McGillivray Township, Middlesex County, near Ailsa Craig, is reported to have encountered oil around 1,500 feet, after several months drilling. The drillers are reported getting ready to tube the well.

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PERFECTION VAPOR PRESSURE TANKS
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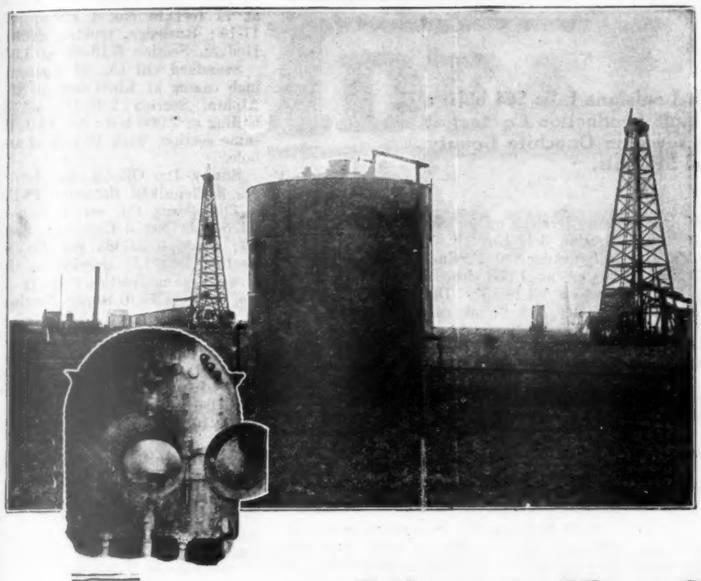

Here is a close-up of a Perfection Vapor Pressure Flow Tank which in addition to scrubbing oil from the gas is firing the lease boiler shown in the background. The inset is the front of the boiler. This picture was taken in the Duncan field. Name of company on request.

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North Louisiana-Arkansas

By M. L. Vaughn

Arkansas output increases 3,090 bbls., while North Louisiana falls 564 bbls. a day. Third gas sand found in Waskom Field by Gulf Production Co. test at 2,804 feet. Only one producer in Union County; seven in Ouachita County aggregate 615 bbls. and five in Cotton Valley total 515 bbls.

SHREVEPORT, La., March 1. — Another substantial increase in the output of the Arkansas Field marked the development of the past week, the increase averaging 3,090 bbls. a day. The recent posting of heavy oil at $1.30 a barrel has met with a quick response and drilling activity throughout the heavy oil territory has almost doubled within the past few weeks. Total production from the Arkansas fields averaged 107,285 bbls. a day, distributed as follows:

South Arkansas	
El Dorado	9,140
Nevada County	1,420
Smackover light	32,310
Smackover heavy	62,350
Stephens	2,065
Total	107,285

North Louisiana production fell of 564 bbls. a day, increases in Bellevue, Haynesville and De Soto being more than offset by a decrease in other districts. There is very little development in progress in the old North Louisiana fields, most of the present activity consisting of wildcat tests in search of new producing territory. Production for the week in North Louisiana averaged 49,493 bbls. a day, distributed as follows:

North Louisiana	
Bellevue	4,010
Caddo light	8,950
Caddo heavy	2,090
Cotton Valley	8,130
De Soto and Red River	4,350
Elm Grove	683
Haynesville	14,585
Homer	6,695
Total	49,493
Total both fields	156,778
Increase	2,526

Interest is still centered in the development of the Waskom gas district, in the south end of Caddo Parish, and on the eastern edge of Harrison County, Texas. The Gulf Production Co. has completed the first of its four tests under contract with the State Line Oil & Gas Co., getting an 18,500,000-foot gas well in the Trinity sand at 2,804 feet. This makes the third gas producing sand which has been located in this district, the first at 900 and the second at 1,900 feet, and precludes the theory that the life of the Waskom Field will be of short duration. The Gulf's deep well, which is on the Waterman lease in the E. Pollock survey, 1¼ miles southeast of Waskom and right on the State line, is the second deep gas well in the Shreveport territory, the first being the Dixie Oil Co.'s No. 43 Robertshaw in the Pine Island district, Caddo Parish. The Shreveport Producing & Refining Co. is building a 4-inch line from the Waskom Field to its refinery at Jewella, just out of Shreveport, a distance of 15 miles, the gas to be used for fuel for the refinery.

Completions

Union County, Arkansas

Only one producer was completed in Union County during the past week, the Magnolia Petroleum Co. getting a 20-bbl. pumper at 2,260 feet in No. 4 Campter-Campbell, in Section 13-16-17, in the south end of the Louann district.

Hickman and others abandoned No. 1 Graves, Section 3-16-15, at 2,404 feet.

Ouachita County

Completions in the Smackover Field, in Ouachita County, numbered eight, with seven producers having an aggregate initial production of 615 bbls., and one failure.

Gulf Refining Co. completed No. 13 Alphin, Section 2-16-15, pumping 45 bbls. at 1,994 feet; No. 8 Hardin, Section 28-15-16, pumping 60 bbls. at 2,292 feet, and No. 3 Reynolds, Section 23-16-17, pumping 75 bbls. at 2,305 feet.

Hunt and others completed Patton C-13, Section 26-15-17, pumping 75 bbls. at 2,340 feet and No. 1 Riley, Section 22-15-17, pumping 150 bbls. at 2,362 feet.

Magnolia Petroleum Co.'s No. 1 B. Clawson, Section 35-15-17, came in at 2,295 feet, making a 60-bbl. pumper.

Riggs and others completed No. 2 Green, Section 23-15-17, pumping 150 bbls. at 2,358 feet.

J. S. Smith abandoned Shirley A-2, Section 35-15-17, at 2,294 feet.

Cotton Valley

While there was no sensational development in the Cotton Valley district during the week, operations showed fairly good results, the completions numbering six, with one failure, and five producers having an aggregate initial production of 515 bbls.

Crusader Oil Producing Co. completed Hope Estate B-10, Section 13-21-10, pumping 200 bbls. at 2,514 feet.

Humble Oil & Refining Co. completed Bodcau B-11, Section 13-21-10, pumping 100 bbls. at 2,514 feet and Bodcau B-12 Section 24-21-10, pumping 100 bbls. at 2,513 feet, and No. 4 S. S. Merritt, Section 14-21-10, pumping 35 bbls. at 2,572 feet.

Ohio Oil Co.'s No. 16 Bodcau, Section 13-21-10, made an 80-bbl. pumper at 2,511 feet.

Fortuna Oil Co. abandoned No. 1 Crichton, Section 19-21-9, testing dry at 2,660 feet.

Bossier Parish

Arkansas Natural Gas Co. completed No. 1 Bolinger, Section 32-23-11, making 45,000,000 feet of gas at 2,647 feet.

Bellevue Field, Bossier

W. D. Chew completed No. 3 fee, Section 27-21-16, making 15 bbls. of oil with 1,000 bbls. of salt water at 1,950 feet.

Morehouse Parish

Oil Field Exploration Co. completed No. 1 R. Watson, Section 13-20-4, making 13,000,000 feet of gas at 2,185 feet.

Ouachita Parish

W. C. Feazel completed No. 1 Richland, Section 14-19-4e, making 10,000,000 feet of gas at 2,201 feet.

Ladel and others completed No. 32 fee, Section 10-19-5e, making 28,000,000 feet of gas at 2,159 feet.

Red River Parish

Tarver and others got salt water at 2,832 feet in No. 1 Conley, Section 2-14-10, and the test was abandoned.

Drilling Operations

Union County, Arkansas

There is continued activity in the El Dorado and Smackover Fields, 51 wells drilling during the past week in Union County, 19 new derricks, and 3 locations.

Arkansas Fuel Oil Co. is drilling No. 1 Scott, Section 1-16-17, at 75 feet; set 6-inch casing at 2,252 feet in No. 6 LaGrone, same section.

J. W. Clark set 10-inch casing at 79 feet in No. 2 Palmer, Section 9-16-15, and drilling at 1,450 feet; Coats and Sowell are drilling No. 1 Springer, Section 36-17-16, at 1,400 feet; Crawford and Sebastian set 6-inch casing at 1,935 feet in No. 8 Giller, Section 14-16-15; have derricks up for Nos. 5 and 6 Graves, Section 3-16-15.

Crusader Oil Producing Co. set 8-inch casing at 1,938 feet in No. 5 Graves, Section 3-16-15; Dellmeyer, W. A. Trustee, set 6-inch casing 2,150 feet in No. 1 Ezell, Section 13-17-15; Doern and others are drilling No. 1 Bradley, Section 4-19-16, at 1,300 feet; Falls and others are drilling No. 1 Johnston, Section 1-18-17, at 1,450 feet.

Federal Petroleum Co. has derrick up for No. 3 Childs, Section 8-16-16; W. H. Gilliland, rigging up No. A-2 Hodges, Section 8-16-16; Grimes and Jones rigging up No. 8 Van Hook, Section 7-18-14.

Gulf Refining Co. is waiting on standard rig with 47 feet of sand and 800 feet of oil in the hole at 2,006 feet in No. 12 Alphin, Section 2-16-15, waiting on standard rig with 11 feet of sand and showing of salt water at 2,319 feet, and with 320 feet of fluid in the hole No. 1 T. P. Howard, Section 13-16-17; rigging up No. 12 Hardy-Murphy, Section 3-16-15; arranging to abandon No. 18 L. Werner, Section 5-16-16, at 2,589 feet with 1,600 feet of salt water in the hole; drilling No. 31 L. Werner, Section 5-16-16, at 2,615 feet; set 10-inch casing at 281 feet in No. 34 L. Werner, Section 5-16-16, and in No. 35 L. Werner Section 6-16-16.

Hickman and others are drilling No. 6 Graves, Section 3-16-15, 2,294 feet, (this well was formerly completed and estimated at 30,000,000 feet of gas at 2,261 feet); set 12-inch casing at 66 feet in No. 8 Graves, same section.

Hollyfield and others set 6-inch casing at 1,947 feet in No. 7 Giller, Section 11-16-15, and drilling at 1,952 feet; Section 10-16-15 rigging up No. 8 Giller, and have derrick up for No. 9 Giller, and Section 11-16-15 made location for No. 10 Giller.

Howell and others set 10-inch casing at 64 feet in No. 3 Williams, Section 3-16-15; Houston Oil Co.'s No. 1 Miller, Section 3-16-15, turned into gas and is now closed in; will lubricate and make gas well out of this at 2,293 feet; have derrick up for No. 1 Parks, Section 8-16-16; the Humble Oil & Refining Co. is building derrick for No. 5 Pate, in Section 10-16-15.

Jones and Ganzell set 12-inch casing at 249 feet in No. 1 Murphy, Section 36-19-14; Liberty Oil Co. drilling No. 1 Davis, Section 31-16-14, at 2,246 feet; Lion Oil & Refining Co. has derrick up for No. 2 Bilyew, Section 8-16-15; drilling No. 5 Flenniken, Section 10-16-15, at 1,700 feet; and No. 1 Hays, Section 4-16-15, at 1,470 feet.

Magnolia Petroleum Co. has derrick up for No. 1 Freeman, Section 7-16-16; rigging up No. 4 Powell, Section 19-16-15; Murdock and others could not get 12-inch casing down, so set 15-inch casing at 42 feet, and 10-inch casing at 503 feet in No. 3 Bilyew, Section 8-16-15, and drilling at 1,050 feet.

Natural Gas & Petroleum Co. tested 150 feet of oil at 2,096 feet in No. 6 Murphy, Section 8-16-15, and drilling at 2,395 feet; Ohio Oil Co. is rigging up No. 3 Ballard, Section 14-16-15.

Phillips Petroleum Co. set 12-inch casing at 63 feet in No. 9 Giller, Section 11-16-15; and in No. 10 Giller, same section; Pure Oil Co. set 8-inch casing at 1,950 feet in No. 11 Craig, Section 15-16-15, and drilling plug. Pure Oil Co. is fishing liner at 2,065 feet in No. 1 Dumas, Section 16-16-15.

Sam Richardson is rigging up No. M-1 Murphy, Section 14-16-15; Rogers and others are trying to set liner with 22 feet of broken sand in the hole at 2,003 feet in No. 2 LeCroy, Section 17-16-15; Russell and others set 10-inch casing at 77 feet in No. 1 Brown, Section 6-17-14; Rutledge, trustee, drilling No. 5 Hodges, Section 6-16-18, at 1,950 feet.

Standard Oil Co. of Louisiana set 6-inch casing at 1,900 feet in No. 2 J. H. Alphin, Section 2-16-15; set liner and bailing at 2,006 feet; No. 16 J. H. Alphin, same section, with 46 feet of sand in the hole.

Sunny Jim Oil Co. has derrick up for No. 3 Flenniken, Section 9-16-15.

The Texas Co. set 12-inch casing at 63 feet in No. 3 Calloway, Section 4-16-15; made locations for No. 6 Graves, Section 3-16-15; derrick up for No. 7 Graves, same section; Unity Petroleum Co. drilling No. 6 Roper, Section 3-16-15; at 2,010 feet; set 15-inch casing at 65 feet, and 12-inch casing at 512 feet in No. 7 Roper, Section 3-16-15.

Ward and others are drilling No. 1 Goodwin, Section 16-16-14, at 1,870 feet; Weatherbee and others set 6-inch casing at 2,216 feet in No. 4 Rice, Section 6-16-16.

Ouachita County, Arkansas

Boyd and Bonham have liner stuck 200 feet off bottom in No. 1 Stringfellow, Section 28-15-16, and waiting orders at 2,064 feet; Bray-Hawthorne are arranging to test, 43 feet of broken formation in the hole at 2,595 feet in No. 1 Goodwin, Section 12-15-17.

Cumberland Petroleum Co. is rigging up No. 5 Reynolds, Section 23-15-17; Eberhardt and others rigging up No. 1 Gibson, Section 27-15-17; El Dorado Union Oil Co. set 10-inch casing at 62 feet in No. 3 LaGrone, Section 36-15-17; Ellis and Dumas drilling No. 4 Forest City Box Co., Section 31-15-16, at 2,220 feet.

Forest Oil Co. set 6-inch casing at 2,267 feet in No. 10 Cramer, Section 27-15-16; derrick up for No. 16 Cramer, Section 22-15-16; Guy Freely set 6-inch casing at 2,286 feet in No. 1 Gibson, Section 26-15-17. George and Jones drilling No. 3 Umsted, Section 4-16-15, at 2,300 feet.

The 6-inch casing parted in Giles and others' No. 1 Hardin, Section 28-15-16, and they are waiting orders at 2,292 feet; set 10-inch casing at 45 feet in No. 1 Neely, Section 26-15-16.

Gilliland Oil Co. is waiting on standard rig with 800 feet of oil and 19 feet of sand in the hole at 2,299 feet in No. 5-S LaGrone, Section 36-15-17; drilling No. 5-B Myar, Section 30-15-16, at 2,265 feet.

Gray and others tested dry, with showing of oil at 2,258 feet in No. 3 Myar, Section 32-15-16; 8 feet of sand in the hole, and will deepen.

Gulf Refining Co. is waiting on standard rig with 40 feet of sand and 400 feet of oil in the hole at 2,006 feet in No. 2-S Bennett, Section 32-15-15; drilling No. 1 Burkett, Section 7-15-16, at 1,100 feet; set 6-inch casing at 2,186 feet in No. 9 Fincher, Section 33-15-16; set 6-inch casing at 2,257 feet in 4-A Goodwin, Section 5-16-15; set 10-inch casing at 101 feet in No. 4 Reynolds, Section 23-15-17, and derrick up for No. 1 Scott, Section 34-15-15; drilling through liner at 2,265 feet in No. 32 Werner, Section 32-15-16; waiting on standard rig with 11 feet of sand and 900 feet of fluid, showing of salt water, at 2,301 feet in No. 9-A Werner, Section 32-15-16; waiting on standard rig with 15 feet of sand and 250 feet of fluid with showing of salt water, at 2,326 feet in No. 10-A Werner, same section; set 10-inch casing at 102 feet in No. 11-A Werner; rigging up No. 12-A Werner, Section 32-15-16, and derrick up for No. 13-A Werner, Section 27-15-17.

Hale and others are losing returns at 1,941 feet in No. 1 Fincher, Section 29-15-16; Hickory Oil Co. made a location

(Continued on Page 100)

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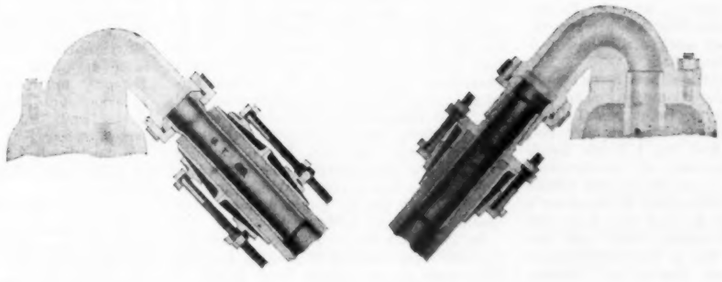

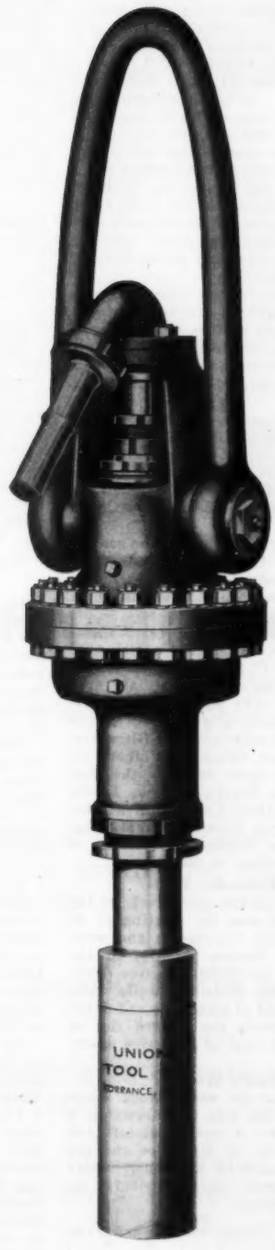

The NATIONAL SUPPLY COMPANIES

Kentucky—Tennessee

By Vern T. Whitney

Dafoe and others score banner completion, No. 1 Draper, flowing 100 bbls., in Tinsley's Bottom, Clay County, Tennessee, opening new producing territory. No. 1 Swan making 25 bbls. on pump. Thirty-six new wells started in Kentucky during week. Union Gas & Oil gets 50 and 30-bbl. wells in North Weir.

BOWLING GREEN, Ky., March 2.—Dafoe and others scored the banner completion in the southern fields the past week when they drilled No. 1 on the Draper farm from 40 to 90 feet below the Pencil Cave. At the latter depth the well flowed 300 bbls. naturally into storage tanks. At 350 feet, 40 feet in the Pencil Cave, oil rose to the top of the hole and made several flows before being drilled deeper. The Draper test is three-quarters of a mile east of the Lynn tract at Tinsley's Bottom, in the southern portion of Clay County, Tennessee, near the Jackson County line, and serves to open a new producing area.

No. 1 Swan, in the same county, three-quarters of a mile to the south of the Draper and 1 mile southeast of the Lynn, made 25 bbls. at 500 feet, 200 feet below the Pencil Cave, when put on the pump and further established the opening of a new pool.

The discovery well of this sector, No. 1 Hamp Lynn, is pumping 24 bbls. daily, while No. 2 on the same farm is holding up at the rate of 100 bbls. when opened up. At present twenty-one 250-bbl. tanks are filled and additional tankage is being erected.

In the vicinity of Celina, in the central portion of Clay County, two dusters are reported, Alexandria's No. 2 Stover, and Spain and others' No. 2 on an unknown farm.

In Scott County, Tennessee, the Superior Oil Corp. is starting a test near Winfield on the C. & S. R. R. A failure was made in this same immediate area some time ago. The Superior is also reported to be starting a wildcat on the Bryant farm, 20 miles north of Glenmary. In Macon County, Carson and others are progressing in their test on the Jim Hayes farm on Bearfoot Creek, 1 mile south of the Allen County, Kentucky, line. In Overton County, W. H. Boswell's No. 1 on Mitchell Creek was reported to be drilling at 532 feet.

New Kentucky Wells

The feature of the past week in the Kentucky Field was the starting of 36 new wells in both the eastern and western divisions. Barren County, in the west end, lead the State in active development work with 40 drilling wells, while North Weir Field of Lawrence and Johnson Counties heads the eastern tier of counties with a total of 31 active operations.

Week's Work

A summary of the week's work shows an increase of 252 bbls. in production, 4 more completions, 4 more producers and the same number of dry holes and gas wells when compared with last week's figures. The wells were distributed by counties as follows:

County—	Comp.	Wells	Prod. Prod.	Dry	Gas
Barren	5	5	30	0	0
Allen	4	2	14	2	0
Lawrence-Johnson	3	3	105	0	0
Johnson-Magoffin	2	2	8	0	0
Owensboro	3	3	13	0	0
Lee-Owsley	2	2	18	0	0
Floyd	2	0	0	0	2
Jackson	2	0	0	2	0
Warren	2	1	3	1	0
Wayne	1	1	2	0	0
Clay County, Tenn.	4	2	325	2	0
Scott County, Tenn.	1	0	0	1	0
Total	30	20	518	8	2
Last week	26	16	266	8	2
Difference	4	4	252	0	0

In the North Weir Field of Lawrence and Johnson Counties, the Union Gas & Oil Co. finished its initial test on the C. E. Frailey farm in district No. 22 for 50 bbls. flush from the Weir sand at an approximate depth of 690 feet. This completion extends production several locations to the north of the Dobyne and Sparks farm, in the northern extension of the Martha Field. In district No. 32 P. P. Holbrook started off at 30 bbls. from the Weir sand.

In district No. 22-A Garrison and Townsend brought in their sixteenth straight producer on the C. K. Dobyne farm, making 25 bbls. its initial test. These parties are drilling Nos. 17, 18 and 19 C. K. Dobyne, No. 2 J. N. Sparks, No. 1 Lizzie Collier and No. 5 Foster Ferguson.

The Union Gas & Oil Co. is cleaning out No. 1 C. E. Frailey, No. 30 Foster Ferguson and No. 15 Levisa Skaggs; No. 3 Caney Sparks, No. 3 Jean Hoolbrook, No. 2 farm, No. 6 W. D. Lester and No. 7 C. K. Dobyne are spudding.

In district No. 32 the Carter Oil Co. is moving a rig to No. 1 location on the Sparks farm. In district No. 22 Hupp & Duff were spudding in No. 1 W. A. Bailey. The Indian Tex Oil Co.'s Nos. 8 and 9 Jesse Rose were being tested, as well as No. 13 G. Gilliam.

South Weir Field

In the South Weir Field comprising parts of Johnson and Magoffin Counties, the Cumberland Petroleum Co.'s No. 10 Sam Collins in district No. 27 tested 4 bbls. from the Weir sand. The Mid-South Oil Co.'s No. 3 Branch Blanton in the same district pumped 4 bbls. from the Weir sand.

The wildcat of Hays and Rogers on the Wireman farm on Licking River is shut down with no oil showing at 2,200 feet. The Pure Oil Co.'s test on Trace Fork of Licking River in the southeastern portion of Magoffin County was progressing at 1,200 feet, according to reports.

Lee-Owsley Counties

In the Idamay Field of Lee and Owsley Counties, the Black Gum Oil Co. made a 10-bbl. strike on the Gourley-Redman-McQuire tract at an approximate depth of 1,200 feet. This is No. 12 on that farm, located in district No. 35. In the same district, Combs Brothers are reported to have made an 8-bbl. strike in No. 5 on the Andy Cooms place.

Six wildcat ventures are being made in Lee and Owsley Counties. The Atlantic Oil Producing Co.'s No. 1 Tom McQuillan; Petroleum Exploration's No. 1 Dan Gailliger and No. 1 Davis Deed, both being southwest of production; Mart Davis' No. 1 on White Oak Creek southwest of the Petroleum Exploration's gas field; Beamer & Co.'s No. 1 on the headwaters of Sturgeon Creek and the Henry Oil Co.'s No. 2 Daniels-Foreman in the Big Neck district of Owsley County.

Floyd County

Floyd County came to the fore the past week with two good gas wells drilled on Left Beaver Creek near the Hamlet of Drift. The Carter Oil Co.'s No. 1 Turner showed 700,000 feet of gas from the Maxon sand found from 1,104 to 1,175 feet; same company's No. 1 Noah Martin gauged 1,400,000 feet of gas from 1,220 to 1,232 feet.

At the present the following wells are going down in Floyd County: Ohio Fuel Oil Co.'s No. 1 H. D. Martin, spudding; No. 3 J. D. Turner, shut down at 1,900 feet; No. 1 Millie Miller, shut down at 3,145 feet; No. 1 Mordie Martin, drilling at 2,400 feet; New Domain Oil & Gas Co.'s No. 4 John Martin, drilling at 700 feet; Louisville Gas & Electric Co.'s No. 2 Tandy Martin, drilling at 2,200 feet; No. 1 Maryland Martin, drilling at 2,000 feet; Yolondo Oil Co.'s No. 1 T. Collins, drilling at 750 feet; Brown & Harmon's No. 1 on the Kentucky Pine Coal Lands, drilling at 1,400 feet; Carter Oil Co.'s No. 1 C. D. Potnack, shut down.

In Wayne County, J. C. Brommers' No. 3 P. L. Harmon, district No. 13, pumped 2 bbls. from the Beaver sand.

The Standard Oil Co. of Kentucky is reported to have just finished two dry holes in Jackson County, one near the Rockcastle County line and the other 6 miles west of the dry hole on the Ballard farm recently drilled by the Eastern Gulf Oil Corp. The Standard Oil has just moved a rig to Knox County where it will start a test on Stinking Creek 6 miles from Barbourville.

Barren County

Five completions, all producers increasing the daily production of the Barren County Field 30 bbls. daily is the record made during the week. The best completion was Fred Moore's No. 5 Travis, south of No. 4 Howard, in the Emery-Moore Pool good for 11 bbls. at 502 feet. Shale was from 235 to 285 feet. The sand was topped at 484 feet and drilled into 18 feet and shot with 30 quarts. Four other wells on this tract are pumping 23 bbls. daily from the deep sand at 185 feet below the shale. No. 1, on the Howard farm has pumped 8 bbls. daily for the past year and a half and is considered one of the best in the field. Mr. Moore is now drilling No. 7 on his farm, recently purchased in fee, to offset No. 5 Travis and No. 3 Bruton. In the same pool the Esslinger Oil Co. drilled No. 8 on the Steffey farm to a total depth of 482 feet where a 3-bbl. pumper was had. No. 4 is spudding.

In the Hall Baker area, north of Glasgow, the Wood Oil Co. finished its No. 3 John Church for 8 bbls. at 552 feet, 180 feet below the shale, after shooting 12 feet of sand with 80 quarts. Sansom and others' No. 1 Ben Meyer made a 2 bbl. stripper at 509 feet. This is an important well as it is three-quarters of a mile east of the Evans farm and shows quite a nice extension.

In the Gorby Pool, southwest of the Emery-Moore Pool, Allison and others' got a 5-bbl. starter in their initial test on the Hatfield farm. The McLaughlin No. 2 of Porter and associates and No. 4 Greer of Lewis J. Emery, Jr., & Sons are still pumping 25 to 30 bbls. daily from the Beaver sand.

Drilling Activities

Emery-Moore Pool: Moore and Gassaway's No. 2 Hans Gassaway, drilling at 92 feet; Fred Moore's No. 7 Moore, offsetting No. 5 Travis, spudding; Esslinger Oil Co.'s No. 4 Steffey, drilling at 97 feet; Starr Oil Co.'s No. 14 Ritchie, cleaning out; Nos. 15 and 16, drilling at 90 and 212 feet, respectively; No. 6 Starr drilling at 175 feet; No. 6 Free, spudding; Kopel Oil Co.'s No. 7 Childress, spudding; Harrington and others' No. 5 Burris, cleaning out; Shriver and others' No. 1 Burton heirs, shut down in the sand; Carter Oil Co.'s No. 5 Gooden, drilling at 423 feet; Stafford, Rohedener's No. 3 Price, rigging up; Nelson and others' No. 2 Dossey, drilling below the shale.

(Continued on Page 86)

News of Mexican Fields

By George Blardone

TAMPICO, Mexico, Feb. 27.—With 19 wells completed in Mexican fields the past week, 7 rank as producers and 12 are failures. The new production secured is 5,300 bbls., of which 4,800 bbls. from 6 wells belongs to the northern fields and 500 bbls. tone one well, belongs to the southern fields.

The best well of the week is Sol Oil Co.'s No. 2 Tamisol, a Federal zone well in the old Tampuche sector of the Panuco Field. It was finished for 2,000 bbls. at 2,270 feet. Mexican Petroleum Co., in the Ebano sector, has 1,500-bbl. well in its No. 52 La Dicha, completed at 2,150 feet. In the old Panuco, Mexican Sinclair Petroleum Corp.'s No. 4, Lot 6 Camolote, is good for 600 bbls. at 2,190 feet, and its No. 6 Tananturo is reckoned 100 bbls. at 1,920 feet. In Cacalilao, International Petroleum Co., No. 146, Lot 5, finished at 2,110 feet good for 300 bbls. Mexican Gulf Oil Co. has a small 300-bbl. well in its No. 65 in the El Barco sector at the shallow depth of 1,704 feet.

In the south fields, Mexican Eagle Oil Co., Ltd., has finished its No. 42, Lot 131 Chinampa at a sub-sea level depth of 1,660 feet, rated good for 500 bbls.

Failures of the Week

The failures during the week were all confined to the northern fields and were as follows: La Corona Petroleum Co.'s No. 160, Lot 4 Cacalilao, drilled into salt water at 1,817 feet. International Petroleum Co.'s No. 145, Lot 5, same sector, did the same at 2,250 feet. In the old Panuco, East Coast Oil Co.'s No. 25 Laguna de la Milpa and 438 Ingenio are both dry holes at 2,000 and 2,007 feet respectively. In Corcovado three tests quit as dusters, Corcovado Petroleum Co. finishing its Nos. 3 and 5, Lot 6 at 2,500 and 2,300 feet respectively, and International Petroleum Co. finished its No. 5, same lot, at 2,702 feet. The latter company also calls its No. 1 El Naranjo, the interesting wildcat northwest of Ebano, a dry hole at 2,600 feet, where the drill stopped in the San Felipe. This test had such showings of gas and some oil in upper strata, however, that other tests will probably be put down by International to thoroughly test this district. Mexican Gulf Oil Co.'s No. 64 El Barco is a dry hole at 2,100 feet. At Los Esteros, north of Tampico, American International Fuel Co.'s No. 16 is a duster at 2,180 feet. In its Chapacao sector of the Ebano, Mexican Petroleum Co., has finished Nos. 9 and 16 Chapacao at 2,500 and 2,303 respectively, both dry holes.

Field Operations

In the Cacalilao sector of the northern fields as the week ended drilling operations were as follows: La Corona Petroleum Co., in Lot 4; No. 162 is in white lime at 2,010 feet; Nos. 165 and 166 each cemented 8-inch in the San Felipe at 1,200 feet. In Lot 1, La Corona's No. 151 is drilling in shale at 850 feet. International Petroleum Co.'s operations in Lot 5 follow: No. 109 cemented 8-inch in the San Felipe at 1,200 feet; No. 133 is in gray lime at 1,885 feet; No. 138 in gray lime at 1,685 feet; No. 148 cemented 8-inch in the San Felipe at 1,215 feet; No. 149 is in gray

(Continued on Page 88)

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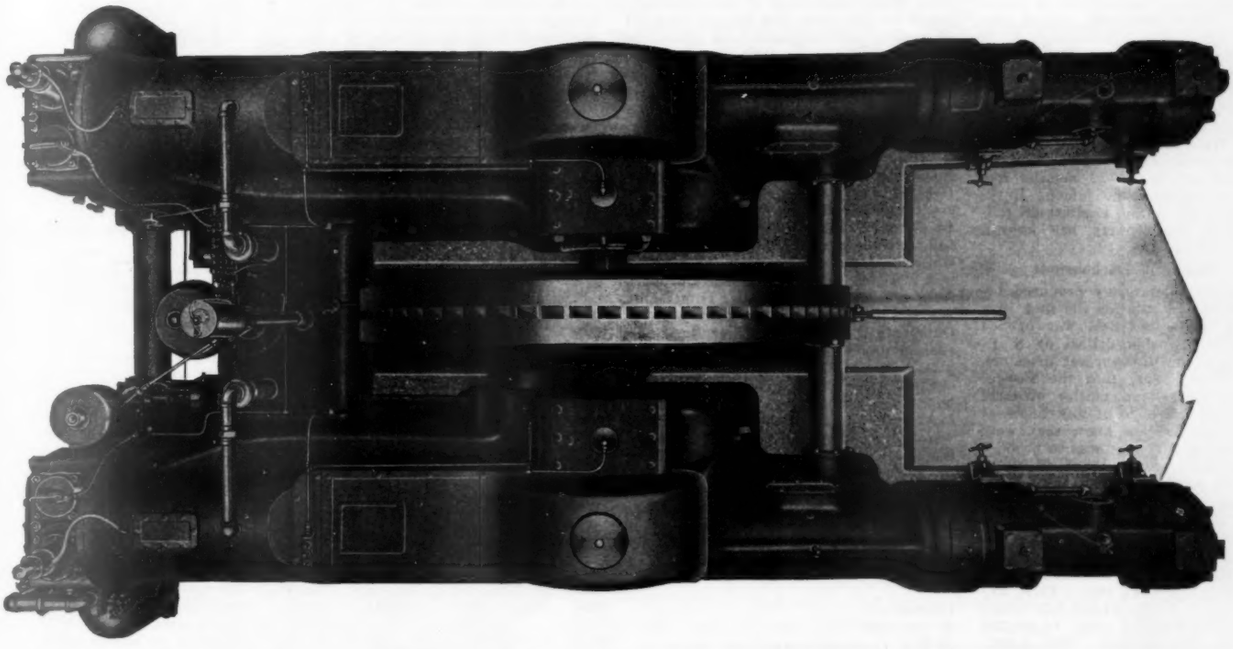

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The purchase price of a Gas Engine Driven Gas Compressor should be considered on the basis of completeness in every detail increasing its efficiency.

Maximum efficiency can only be obtained in a unit in which all parts are built to withstand a maximum load.

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The life of wearing parts will depend on the construction, proportions and materials used along with the system of lubrication.

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This if added to first cost of the unit would make the first cost excessive and would affect to a considerable degree continuous operation.

Historic Field Drops From Major Class

Twenty-Nine Other Pools in Select Circle Produce No More Than Twenty-Four Major Pools a Year Ago

By James McIntyre

The number of major pools in the United States in January of this year was 29, or 5 more than there were in January 1924, but the total average daily production of the 29 pools, 1,284,332 bbls. was slightly below that of the 24 major pools of a year previously, which was 1,286,674 bbls.

In the course of the year nine pools were added to the major class, these having been Dominguez and Coyote in California; Stroud, Graham-Fox, Cromwell and Papoose in Oklahoma; Luling, Richland and Wortham in Texas. Of these Stroud, Graham-Fox and Richland dropped out before the 12 months was over and in addition the famous Burkburnett Pool, one of the greatest oil producing areas the country has known, withdrew in January.

The Passing of Burkburnett

Burkburnett in January produced below 15,000 bbls. a day for the first time since 1918, when the field was opened in July with a gusher drilled by S. L. Fowler and other Burkburnett investors, who put their money into the Fowler Farms Co., more as a matter of local pride than in the hope of any financial returns. They did not know they were going to open a field that was to produce 108,926,687 bbls. of high-grade oil in the next six and one-half years.

Burkburnett's high production year was 1919 when it had an output of 31,328,380 bbls., or an average of over 86,000 bbls. a day Its record since the discovery well came in was as follows: Last half of 1918, 6,598,711 bbls.; 1919, 31,328,380 bbls.; 1920, 24,582,165 bbls.; 1921, 18,797,110 bbls.; 1922, 11,591,322 bbls.; 1923, 9,135,232 bbls.; 1924, 6,893,767 bbls. It has now gone the way of all oil pools. Few of them stand up as Cushing has done. That great field produced 260,620,750 bbls. from 1914 to 1924 both inclusive, or 11 years. Cushing's big year was in 1915 when it yielded 70,704,854 bbls. of high grade oil and in two other years, 1914 and 1916, it produced more than Burkburnett at its best.

Healdton, which is still in its place among the major pools, produced from 1913 to 1924, both inclusive, 131,725,851 bbls. of 30 gravity oil. The oldest of the present major pools are in California. Kern River dates back to 1900 and produced in 24 years 249,208,688 bbls. of 13 gravity oil. Midway was opened in 1901, and Sunset in 1900, and the two have produced 511,986,548 bbls., the crude averaging 22.5 gravity. Coyote was opened in 1912.

Average Well Production

In the accompanying table of production the columns showing average production per day per well develop some very great changes in the course of a year. In January, 1924, wells in Long Beach, Cal., averaged 604 bbls. a day each, while in January this year their record was 229 bbls. Santa Fe Springs dropped from 445 bbls. to 139.6 bbls.; Huntington Beach from 230.9 bbls. to 134.9 bbls. In Oklahoma it will be seen that Burbank's average production per well fell from 72.2 bbls. a day to 34 bbls. a day. Tonkawa, on the other hand, increased from 64.4 bbls. to 132 bbls. for which the deep sand wells in the field drilled in 1924 were responsible. Old reliable Cushing-Shamrock remained almost stationary, the average changing from 9.2 bbls. a day to 9 bbls. a day and Healdton's average of 9 bbls. per well showed no change whatever in the year. Cromwell and Papoose, which did not figure in the major pools in January 1924 averaged in January 1925 132.6 bbls. and 446.3 bbls. per day per well respectively.

In the East Central Texas area the recently opened Wortham Pool, which reach its peak in January 1925 had an average production per well of 792.6 bbls., leading all fields in the country excepting Dominguez, Cal., which is credited with 1,295 bbls. per day per well. The Smackover Field's well average dropped from 91.5 bbls. to 37.3 bbls. Haynesville fell off considerably during the year with an average of 34.2 bbls. in January last year and 22.1 bbls. a day this year.

Average Gravity of Oil

The average gravity of the oil in the 29 major pools in January 1925 was 30.9 degrees, and omitting Kern River and Coalinga fields in California, where the crude is only 13 and 16 degrees gravity respectively, and including only the refinable grades of oil of 20 gravity was 31.5 degrees.

The production of major pools by gravity shows that of crude of 40 gravity and above only the Tonkawa Field in Oklahoma figured, and its production constituted 7.5 per cent of the total for the 29 principal fields. A year previously this grade constituted only 3 per cent of the total. In the next classification, 38 to 39.9 degrees there was an increase from 6.6 per cent in January last year to 20.2 per cent in January 1925. The 36 to 37.9 grades showed a falling off from 25.6 per cent to 15.1 per cent in the course of the year and the 34 to 35.9 grades fell 5 per cent to 3.4 per cent. There was a drop from 12.3 per cent to 5.1 per cent in the 32 to 33.9 grades. In the lower gravities, below 26 degrees the percentage fell from 44.2 to 38.2.

Several pools are on their way toward the major class. The Otoe Pool in Pawnee County, Oklahoma, needs only sufficient drilling to bring it into the select circle. The same may be said of the 5,000-acre structure in Reagan County, Texas, and the Rainbow Bend Pool in Kansas, it is believed, will yet be given a place with the other big ones before it begins to decline permanently.

	Barrels		Per Cent	
Degrees—	January 1924	January 1925	January 1924	January 1925
40 and over	39,723	96,334	3.	7.5
38-39.9	84,833	258,992	6.6	20.2
36-37.9	328,888	194,550	25.6	15.1
34-35.9	64,487	43,337	5.	3.4
32-33.9	158,014	65,800	12.3	5.1
30-31.9	15,956	103,250	1.2	7.
28-29.9	.....	.....	...	...
26-27.9	25,000	31,894	2.	2.5
Below 26	569,773	490,175	44.2	38.2
	1,286,674	1,284,332		

JOKER IN GASOLINE TAX

A joker has been discovered in the bill before the California State Legislature which plans to increase the gasoline tax to 3 cents a gallon. The proposed law would make the collection of the 1 cent increase retroactive to September 30, 1923, when the present 2-cent tax went into effect. Such legislation would force the payment of millions of dollars back taxes and because of this refiners, as well as users of gasoline are uniting to combat any increase in the present rate from which the State is now obtaining upwards of $15,000,000 annually.

VALUE OF CALIFORNIA OIL

The California State Mining Bureau has made public its estimation of the mineral production of California for 1924. The estimated total of $358,745,000 is an increase of nearly $15,000,000 over the 1923 production which in turn surpassed the previous record value of the year 1921. This increase in value is due in part to petroleum which, although decreasing about 33,000,000 bbls. in quantity it is estimated will show an advance in total value for the year because of the higher prices per barrel prevailing during 1924.

PRODUCTION OF THE MAJOR POOLS OF THE UNITED STATES

	August	September	October	November	December	January	No. Oil Wells Producing in January	Av. Daily Prodn. Per Well Jan. 1925	Av. Daily Prodn. Per Well Jan. 1924	Average Gravity of Oil
California—										
Midway-Sunset	104,969	103,267	109,619	109,037	106,161	105,918	2,952	35.9	33.3	22.5
Long Beach	149,033	142,645	136,418	128,464	125,600	122,297	534	229.0	604.0	25.0
Santa Fe Springs	57,987	56,683	54,909	53,097	50,641	49,554	355	139.6	445.1	33.5
Huntington Beach	41,642	41,274	40,690	40,591	41,966	41,673	309	134.9	230.9	23.0
Torrance	56,165	54,315	49,447	45,586	44,942	41,788	536	77.9	225.6	22.0
Elk Hills	41,021	40,939	39,150	38,417	37,710	37,019	261	141.8	175.0	22.0
Coyote	20,275	19,952	20,179	20,744	20,306	20,242	229	88.4	....	22.0
Kern River	18,652	18,260	17,787	18,113	17,856	17,783	2,173	8.2	8.8	13.0
Coalinga	24,764	21,413	24,653	24,859	24,994	22,402	1,027	21.8	22.1	16.0
Montebello	16,908	16,786	16,930	16,906	17,485	19,428	158	123,0	112.3	24.0
Dominguez	23,884	30,021	32,576	33,767	52,937	56,982	44	1,295.0	....	31.5
Wyoming—										
Salt Creek	87,467	80,350	68,279	57,038	56,150	56,166	1,352	41.5	133.1	37.0
Oklahoma—										
Burbank	75,415	74,317	73,360	71,205	68,212	58,644	1,667	34.0	72.2	37.5
Bristow	40,567	41,114	38,947	32,766	32,055	28,153	1,454	19.4	49.9	34.0
Tonkawa	70,753	104,367	101,419	96,207	102,691	96,334	730	132.0	64,4	42.0
Cushing	23,871	23,836	23,910	24,045	21,642	23,367	2,587	9.0	9.2	38.0
Hewitt	19,164	18,513	17,965	17,074	16,050	16,246	795	20.5	27.0	33.0
Healdton	16,075	16,177	16,164	16,301	15,140	15,548	1,916	8.1	8.1	30.0
Cromwell	60,898	45,060	40,816	47,890	40,872	33,147	250	132.6	....	38.5
Papoose	.....	.....	.....	23,490	29,947	35,257	79	446.3	....	38.5
Texas—										
Powell	79,330	78,615	75,558	69,242	60,871	59,301	752	78.9	151.4	37.0
Mexia	26,913	25,315	24,700	23,457	20,407	20,439	472	43.3	66.2	36.0
Wortham	.....	.....	.....	.....	28,818	113,336	143	792.6	....	39.0
Electra	21,016	20,535	20,388	18,530	17,509	17,587	2,441	7.2	9.0	38.5
Holliday	29,952	27,828	28,944	38,339	39,115	36,298	1,531	23.7	29.1	39.0
Hull	21,641	18,769	17,340	15,960	15,494	15,339	270	56.8	101.0	20.0
Luling	44,667	31,164	28,680	32,884	34,412	30,720	335	91.7	....	30.0
Arkansas—										
Smackover	124,076	118,367	112,921	102,615	95,129	78,180	2,096	37.3	91.5	22.0
Louisiana—										
Haynesville	18,519	17,744	16,412	16,428	15,929	15.184	688	22.1	34.2	34.0
Total	1,342,554	1,287,626	1,248,161	1,233,032	1,251,041	1,284,332	28,136	45.6	51.6	...

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"I reckon so."
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"Oh, yes, we used it."
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"Well, not hardly—you see we didn't use your belt in the reg'lar way. We got STANLEY belts on our rigs and of course, you'd get old waitin' for *them* to wear out."
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In the heat, in the cold, soaked with rain or with oil, plastered with mud or dry as dust, STANLEY SOLID WOVEN COTTON BELTING delivers the goods year in and year out.

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STANLEY BELTING
MADE IN SCOTLAND

Pennsylvania-West Virginia

By D. S. Wakenight

Carter Oil Co. has best well in deep sand territory, southeastern Ohio, 100 bbls., Washington Township, Hocking County. Pure Oil Co. gets 20-bbl. well in shallow sand, York Township, Morgan County. Tuscarawas County wildcat makes showing. Mayfield Oil & Gas Co. has 20 bbls. natural,

PITTSBURGH, Pa., Mar. 2.—With the exception of the completion of one good producer, development work in the Eastern fields was almost featureless. Operators are taking a greater interest in territory offered and a few are taking up leases so as to be in a position to drill when conditions are favorable. By this it is understood that a further advance in the market is necessary.

The one good producer completed is in the deep sand territory in southeastern Ohio, in the southeast quarter of Section 15, Washington Township, Hocking County. It is the Carter Oil Co.'s test on the W. Huggins farm and good for 100 bbls. a day. In the shallow territory in Section 26, York Township, Morgan County, the Pure Oil Co. completed and shot in the Berea grit No. 4 on the George J. Fry farm. It is good for 20 bbls. a day. In the village of Rushville, Rush Creek Township, Fairfield County, the Shaw Oil Co. completed in the Clinton sand a test on the Reed-Hyde town lots, showing for a 10-bbl. pumper.

Wildcat Showing for Producer

In the northwest quarter of Section 24, Mill Township, Tuscarawas County, the Stillwater Oil & Gas Co. completed in the Berea grit a test on the J. G. Patrick farm. It is 500 feet due east of the same company's test on the Clara J. Eddy farm and showing for a 5-bbl. pumper. With additional test work it may lead up to development of some new producing territory. In Section 47, Salem Township, Washington County, George Trier & Co. completed No. 3, on the A. A. Wharff farm and dry in the 800-foot sand. It is 800 feet east of the first test on this farm.

In Independence Township, Washington County, the First National Bank of Marietta completed and shot in the Mitchell sand No. 32 on the John A. Herlen and Louisa J. Mendenhall farm. It is 500 feet west of No. 31 and good for 8 bbls. a day. In Newport Township, O. S. Reckard & Co. drilled a test on the Dischler heirs' farm through the Keener sand good for 3 bbls. a day. This is 500 feet east of the same company's test on the H. L. Wick farm.

In Section 2, Franklin Township, Licking County, Moore and Adams completed and shot in the Berea grit No. 8 on the T. L. Stevens farm, not good for more than 2 bbls. a day. In Section 34, Olive Township, Noble County, E. C. Merry and Co. drilled a second test on the Merry farm through the 700-foot sand and dry. The location is a short distance southeast of the first test, a gasser in the Berea grit.

In Lot 29, Hardy Township, Holmes County, the East Ohio Gas Co. completed a test on the Harvey J. Bell farm. This is 800 feet north of the same company's test on the Harriett McCullough farm and is a gasser good for 500,000 feet in the Clinton sand. In Wells Township, Jefferson County, W. E. Burns & Co. completed No. 3 on the W. A. Cox farm, a 5-bbl. pumper in the berea grit. In Athens Township, Athens County, the Carter Oil Co.'s test on the C. O. Lowery farm is a 3-bbl. pumper in the Berea grit. In the same township, the same company has a duster at a test on the Sayler farm.

In Lot 8, Howard Township, Knox County, the Upham Gas Co. drilled a test on the John Cochran farm deep in the Trenton rock and found nothing but a very light show of oil. The well will be abandoned. In Bowling Green Township, Licking County, the Midland Oil Co. started to drill a second test on the Frank L. Orr farm. In Section 10, Hopewell Township, Muskingum County, the Mideast Oil Co. started to drill a test on the E. Bowlin farm.

Starting Test Wells

In Section 14, Knox Township, Guernsey County, the Ohio Fuel Gas Co. started a test on the O. C. Clark farm. In the same township and county, the same company is starting a test on the John G. Wilson 160 acres. Unless production is found in some of the upper sands they will be drilled through the Clinton sand. In Section 9, this company made a location on the James R. McBerney farm.

In Section 8, Jefferson Township, Noble County, the Washington and Noble County Oil & Gas Co. is drilling a deep test on the David Walter farm. It is now drilling in the Niagara Lime at a total depth of 4,200 feet. In Section 23, Reading Township, Perry County, Reagan & Co. are due in the Clinton sand at No. 3 on the St. Josephs Literary Society's property. The second test on this property came in a gasser in the Berea grit and the rig was moved to the present location, 100 feet west. In Alexander Township, Athens County, unknown parties are drilling a test on the Frank Biddle farm. In Section 18, Jefferson Township, Knox County, the Upham Gas Co. is due in the Clinton sand at a test on the Joseph Blubaugh farm. In Brush Creek Township, Muskingum County, local parties are drilling at 1,308 feet in a test on the O. C. Evans farm. On the adjoining farm, the same parties are down 1,675 feet at a second test on the J. S. Evans farm.

West Virginia

On Big Creek of Poca River, Walton district, Roane County, the Mayfield Oil & Gas Co. completed a test on the Samuel Shafer heirs' farm and showing for a natural producer good for 20 bbls. a day, in the salt sand. This location is 4 miles north of the Carter Oil Co.'s production on the G. E. Whitney farm. In Collins Settlement district, Lewis County, the Pittsburgh & West Virginia Gas Co. has a fair fifth sand gasser at a test on the W. J. Wilson farm. In the same district, the West Fork Oil & Gas Co.'s test on the E. R. Haymond farm is a good gasser in the Gantz sand. In Union district, Tyler County, A. S. McCullough & Co.'s test on the L. L. Parker farm is a light gasser in the Maxon sand. In Center district, Wetzel County, the Hope Construction & Refining Co. has a fair gasser in the Big Injun sand at a test on the J. R. Allen farm.

Light Pumper in Logan County

On Bear Willow Branch of Poca River, Logan district, Logan County, the Wacatock Oil & Gas Co. completed and shot in the Berea grit a test on the Dingess Run Coal Co.'s property that may lead up to something more important. It is good for 5 bbls. a day. The nearest pipe line is 35 miles away and the nearest railroad 3 miles distant. This well is calling out some new work in a county that has had no production. On Dingess run the same company has three rigs up on the same property and the Mercantile Oil & Gas Co. has a rig up on the Martha Chambers farm. In the same locality, the South Penn Oil Co. has the rig completed and started to drill a test on the Guyan Mercantile Co.'s property.

On Cabin run, Grant district, Ritchie County, the Hope Natural Gas Co.'s test on the Martha Lewis farm is a light pumper in the Maxon sand. The same company completed in the Big Injun sand a test on the C. S. Lewis farm showing a little oil. At the mouth of Cabin run, this company completed a light gasser. On On Poca Fork of Little Sandy Creek, Elk district, Kanawha County, the United Fuel Gas Co.'s test on the E. J. Canterbury farm is a gasser in the Big Injun sand good for 250,000 feet. On the same stream the same company has the rig completed for a test on the W. J. Patterson farm. Its test on the Vernon Cobb farm is drilling. On Big Sandy Creek, Big Sandy district, the same company is drilling on the Townsend-Young farm. On Little Paw-Paw Creek, Paw-Paw district, Marion County, the Owens Bottle & Machine Co. has drilled a test on the David Cunningham farm through all sands, including the Bayard and dry. On the Dunkard Mill Creek, Lincoln district, the Hope Natural Gas Co.'s test on the Alivra Robey farm is a light gasser in the fifth sand.

Fair Pumper in Calhoun County

At the mouth of Bull Creek of the Little Kanawha River, Sherman district, Calhoun County, and 1 mile south of Grantsville, Bickel Brothers completed in the third salt sand a test on the Stump heirs' farm and it produced 16 bbls. the first 24 hours. On Leading Creek, Sheridan district, the Hope Construction & Refining Co. has a gasser in the salt sand at a test on the W. A. Richards' farm. In Union district, Pleasants County, the Monongahela Oil Co. completed and shot in the Big Injun sand No. 11 on the Wagner farm showing for a very light pumper. On Flat run, Mannington district, Marion County, the South Penn Oil Co. completed No. 3 on the Ash-Fluharty farm. It is a gasser in the Gordon sand, good for 400,000 feet.

In Courthouse district, Lewis County, the Hope Natural Gas Co. is building a rig for a test on the F. G. Yoke farm. In Freemans Creek district, the same company is due in the Big Injun sand on the Martha Kemper farm. In Troy district, Gilmer County, the Star Oil & Gas Co. placed rig material at a location on the S. B. Wiseman farm. In Central district, Doddridge County, Taylor and Whitney shut down for orders at 2,000 feet on the Thomas Doak farm. In the same district, Williams and Nay rigged up to drill on the Luella Smith farm. In Clay district, Ritchie County, Clyde Pickering & Co. have a rig up in the I. C. Pickering farm. In Grant district, J. O. Metzger started to drill on the R. W. Shaw farm. The Penn Royal Oil Co. started to drill on the Sarah E. Wilcox & Co. farm, in Union district, Wood County. In Clay district, the Ridge Oil Co. moved in a drilling machine to a location on the H. B. Price farm.

Gassers in Cabell County

All late completions in Cabell County are gassers. On Merritts Creek, McComas district, the Monickel Gas Co. drilled its test on the Willard Adkins farm 900 feet below the Berea grit and have a light gasser in the Gordon sand. On Big Two-Mile Creek, Grant district, the Aetna Oil & Gas Co. completed and shot in the Brea grit its test on the W. H. McCullough farm. It is a gasser good for 200,000 feet. On Indian Fork, same district, the Walton Oil & Gas Co. completed a second test on the Benjamin Walton farm, good for 250,000 feet.

On Elk Fork of Two-Mile Creek, Malden district, Kanawha County, the Ohio Fuel Oil Co.'s wildcat on the Mary Scott farm increased its production from 4 to 12 bbls. a day. In Grant district, Pleasants County, G. F. Roberts completed No. 3 on the Roberts Brothers' farm. It is a very light pumper in the Horse Neck sand. The Chalmers Oil & Gas Co. completed in the Big Injun sand No. 17 on the McGinnis heirs' farm. It is good for 3 or 4 bbls. a day.

In Paw-Paw district, Marion County, the Hope Natural Gas Co. has drilled its test on the Robert Davis farm through the fifth sand and a gasser. Cole and Campbell have an oil and gas producer at their test on the Bertha Orum farm, in Union district, Marshall County, good for 7 bbls. and 600,000 feet of gas a day. In Smithfield district, Roane County, the Carter Oil Co.'s second test on the McGlothlin heirs' farm is a gasser in the Big Injun sand. In Otter district, Braxton County, the West Virginia Central Gas Co.'s second test on the D. S. Engle farm is a gasser in the Gordon sand.

Lincoln County Gassers

In Union district, Lincoln County, the Carter Oil Co.'s test on the Henry Stowers farm is a gasser in the Big Injun sand. In the same district, the Cambridge Gas Co.'s test on the Wiser Adkins farm is a gasser in the same formation. L. R. Sweetland got a gasser when he drilled a test on his own farm through the Big Injun sand. In Curry district, Putnam County, the Commercial Gas Co. has a gasser in the Berea grit on the James Bays farm. In Union district, Marshall County, the Manufactures Light and Heat Co. has a gasser in the Big Injun sand at No. 5 on the A. M. and Emma Schenk farm. In DeKalb district, Gilmer County, the Hope Natural Gas Co.'s test on the F. W. Beall farm is a gasser in the Big Injun sand. In the same district, the Hope Construction & Refining Co.'s test on the M. Stalnaker farm is a gasser in the same formation. In Sherman district, Calhoun County, the Hope Natural Gas Co. has developed a little oil and gas in Big Injun sand on the Jasper Plant farm. The same company's test on the E. W. Gainer farm is a gasser in the Big Injun sand. In Center district, the same company has a Big Injun sand gasser at a test on the John E. Arbuckle farm.

Drilled Through All Sands

In Grant district, Wetzel County, the Hope Natural Gas Co. drilled its test on the John Ingraham farm through all sands to a total depth of 3,423 feet and found nothing but a light show in the Gordon sand. It will plug the hole below this level and give it a test. The same company's test on the Rachel Lowe farm is due in the Gordon sand. In Proctor district, its test on the L. Goddard farm is now through all sands and is a duster.

Drilling Test Wells

In Union district, Tyler County, Gale and Simmons are drilling a test on the Sarah D. Thistle farm. In Burning Springs district, Wirt County, the Hope Natural Gas Co. moved machinery and tools to a location on the Rebecca J. Hays farm. In DeKalb district, Gilmer County, the Hope Natural Gas Co. made locations for tests on the George W. Miller and H. H. Haney farms. In the same district, the Pittsburgh and &est Virginia Gas Co. is building a rig on the J. S. Stalnaker farm. In the same district, J. B. Stephens has rig material at a location on the P. A. Beall farm. In Center district, the McCall Oil & Gas Co. shut down to repair the rig on the Canzada Stump farm. James Tierney & Co.

(Continued on Page 88B)

TUBING PARTED DURING FIRE

But the GUIBERSON CATCHER Stopped It Before It Had Fallen 3 Inches

During the recent Santa Fe Springs fire, oil in the concrete cellar around this pumping well was ignited and created such terrific heat that the tubing first stretched and then parted.

The GUIBERSON Catcher on the string prevented a fall, however, and after replacing the one injured joint the well was promptly put to pumping again.

The small views show two other wells which were equipped with GUIBERSON Catchers. However, the tubings did not part and the Catchers were given no chance to function.

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GUIBERSON

BETTER BE SAFE THAN SORRY

Fields of the Central West

By Whit

Ohio Oil Co. gets best producer of week, 30-bbl. pumper in Clark County, Illinois. Gage & Eurnell get 10-bbl. pumper in Wood County, Ohio, and Fowler Brothers Petroleum Co. same in Auglaize County. Eight completions in Central Ohio, one making 5 bbls. Makeever Brothers to enter Indiana Field.

FINDLAY, Ohio, March 2.—The recent crude advances have already resulted in the planning of considerable work in the Central West fields. In many ways, the situation looks better than in several years. Everyone is anxious to see crude prices that will warrant new exploratory work, as there is no question that some well located wildcats will open up some new and rich territory. The present proven areas in some of the newer fields of the Central West have not been producing long enough to establish their worth and longevity, like portions of the Trenton Rock fields of Ohio and Indiana and parts of Illinois, and what is now needed more than anything else is a number of wildcat tests in outlying territory, to open up new producing areas and stimulate conditions generally. Had crude oil prices been maintained at a level, during the past few years, that would show a reasonable profit to the operator on average discoveries, there is no doubt enough additional exploratory work would have been done to show twice the present number of producing pools.

There is a large amount of well-located virgin territory awaiting tests, and there are undoubtedly many pools to be found that will compare with anything found in the past. Hardly a week passes but what the writer receives word from some section of the Central West, that asks for to find someone to drill a test well on virgin territory, and all appear to be willing to donate territory for such tests. Some are sure that oil exists where they want tests, but the fact of the case is that wells cannot be located expect by the drilling, and it takes an attractive crude price to stimulate new development work in any field.

There is no question that any of the Central West areas are capable of producing great quantities of crude, and a fair price for crude, maintained over a considerable period of time, will have a great effect on increasing production. Testing out formation below the Trenton Rock in the Old Lima Field, appears to be one of the slogans. To drill these deep holes means a heavy outlay of cash, but should commercial production be found to warrant the greater depth it would revolutionize not only the Trenton Field but others throughout the Central West.

Lima Field

In the old Lima Field of northwestern Ohio during the week a total of five completions were reported, but with a rather light production. Operations have been lacking on account of the moving of materials from the macadamized highways to the locations on leases, due to the thaw.

In Liberty Township, Wood County, Hulse & Kundtz drilled in No. 3 on the southeast corner of the D. W. Levers, in the southwest quarter of Section 4, and found but a 1-bbl. pumper at a total depth of 1,367 feet. In Perrysburg Township, same county, Gage & Eurnell's test on the northwest corner of the Deloy Speck farm, in the northeast quarter of Section 32, pumped 10 bbls. first 24 hours. hours. Top of Trenton was struck at 1,242 feet and drilled in 50 feet to a total depth of 1,292 feet.

In Van Buren Township, Hancock County, the Jenera Oil & Gas Co.'s test 900 feet from the north line and 50 feet from the west line of the C. Basse farm, in the southwest quarter of Section 17, developed into a duster. In the McComb Special District, in Pleasants Township, same county, the Bath Township Oil Co. is drilling No. 5 on the J. E. Heers, Section 23. In Eagle Township, Star & Clark are drilling No. 2 Alice Stauffer, Section 5. In Biglick Township, Cole Brothers abandoned their test on the James Cross farm, Section 20, on account of finding a cave at a depth of 500 feet. In Case Township, same county, the Ohio Oil Co. is drilling No. 19 on the James E. Hudson No. 2 farm, Section 35.

In Moulton Township, Auglaize County, west of Wapakonetta, the Fowler Brothers Petroleum Co.'s No. 4, located 1,000 feet from the south line and 34 feet from the west line of the George R. Julian farm, in the northeast quarter of Section 34, pumped 10 bbls.

In Jackson Township, Sandusky County, B. J. Rineboldt is drilling No. 5 on his own farm, Section 30. In Scott Township, the Home Banking Co. abandoned No. 6 W. H. Myers farm, and No. 4 Ben J. Evenbeck farm, both in Section 27. In Sandusky Township, the Ohio Oil Co. pulled out No. 10 William Hensel, Section 17, and in Madison Township, Lewis Donnel & Son are drilling a test on the Lewis Donnel farm, Section 27.

In the Tiffin Field, in Eden Township, Seneca County, the Sun Oil Co.'s No. 8, located 600 feet from the north and east line of the S. A. Baroff farm, Section 15, is a dry hole. Top of Trenton was found at 1,718 feet and drilled 360 feet in to a total depth of 2,078 feet.

In the Elmore Field, in Harris Township, Ottawa County, the Zorn-Hornung Oil Co. is drilling No. 1 on the A. Barkhow farm, Section 24.

Illinois

Very little is doing in any of the older producing fields of eastern Illinois. Preparations are being made for test work around the outer edges and in counties in the western section of the State that have had a few tests with showings of oil, in hopes of uncovering something like the McDonough Field was a few years ago.

In Casey Township, Clark County, the stray sand is attracting the drilling operations, and is found at approximately 1,450 feet about half way down from the surface to the Trenton Rock formation. The Gillette Oil Corp. is now drilling Nos. 2 and 3 on the C. W. Slater farm, Section 25. In Martinsville Township, same county, and in the same pay sand the Ohio Oil Co.'s No. 16 on the southeast corner of the S. N. Brosman farm, in the southeast quarter of Section 30, pumped 30 bbls. at 1,427 feet. In Parker Township, on Parker Prairie, between Casey and Westfield, in the same county, Luse & Stratton are drilling a test on the A. L. Wiser farm, Section 15, while Shrider and others are at work at a test on the Hattie Brecoe farm, Section 29.

In Robinson Township, Crawford County, Homer Baker and others are at work at a test on the Johnson heirs farm, Section 3.

In Clinton County, Wade Township, the Ohio Oil Co. abandoned No. 5 on the Leapold Deter No. 3 farm, in the southeast quarter of Section 2.

In Wabash Township, Wabash County, J. H. Whiteside and others' No. 2, located 600 feet from the south line and 300 feet from the east line of the H. W. Winter farm, in the southast quarter of Section 24, was a duster at 1,493 feet. Peck & Hughes' test on the northwest corner of the John Keyser farm, in the northwest quarter of Section 23, was also a dry hole at 1,496 feet. In Friendsville Township, same county, Gray and others' test on the southwest corner of the Emily F. Craig farm, in the northwest quarter of Section 32, was a dry hole at 1,600 feet.

A test being watched with much interest is being drilled by McCurdy and others on the Brok Addition to the City of Charleston, in Charleston Township, Coles County, and in Section 10. This is quite a number of miles north of the Westfield producing area in the northern part of Clark County.

Slow work appears to prevail at the well being drilled by George Vanders on the N. Cunningham farm, Section 23, Smallwood Township, Jasper County, west of Crawford County, and the same can be said of the test being made by the Douglas Oil Co., on the W. E. Brown farm, Section 35, Sargent County ,also north of the old producing areas.

Indiana

According to late advice there will be a number of important test wells drilled in the old Indiana gas belt during the coming spring and summer season, and other pools similar to the Hotmire, in Pike Township, Jay County and Ward Township, Randolph County, the pool being along the dividing line of the two counties. McKeever Brothers, a large operating concern has entered the Hotmire and other pools of the Hoosier State, which means that a large area of territory will be tested out by this interest. These people are also largely interested in the Western Kentucky Field.

Several tests are expected to soon start in Jackson, Jennings and other counties south of Indianapolis, but just at present the operations find it almost impossible to move material off the macadamized roads, owing to much rain and mud.

Central Ohio

Eight wells were reported completed in fields of Central Ohio during the week, only one being an oil well with a production of 5 bbls.; two were dry holes and six were gas wells. There were nine new locations staked out and four wells started drilling. This would indicate the gas end of the industry will be rather quiet for a short spell which happens annually and real active work may not start again until after the close of the annual gathering of the Natural Gas Association of America at Atlantic City, in May. From that time until the close of 1925 there should be many tests made for gas in virgin territory held by the large gas producing concerns.

The Wehrle Co., of Newark, has a rig in for a purely wildcat venture 240 feet from the south line and 960 feet from the west line of the Maggie Oatman 119 acres in Section 24, Eden Township, Licking County. This well is on what is known as the James Stillman farm. The Wehrles will drill this well to the deep Trenton Rock formation, if a commercial pay is not found in the Clinton lime.

In Howard Township, Knox County, the Upham Gas Co.'s test on the Craig Cochran farm, in Lot 9, according to advice has reached a depth of 4,800 feet, and that some oil had been found in the Trenton Rock. What will be done with the well remains to be seen. It may be given a shot or may be plugged and abandoned.

In Mohican Township, Ashland County, the Logan Gas Co. has a gas well at a second venture on the G. W. Black farm.

In Litchfield Township, Medina County, the Logan Gas Co.'s test on the Thomas Hurley farm, Lot 55, is reported a duster. In Harrisville Township, the East Ohio Gas Co. made a location for a test on the northeast corner of the F. E. Richardson 103 acres, Lot 16, Ford, Barnhart and others are drilling No. 1 on the Mark P. Sterns 13 acres, Section 4, Westfield Township.

In Sheffield Township, Lorain County, the wildcat drilled by A. J. O'Donnell on the southwest corner of the William A. Day 235 acres, Lot 66, proved a dry hole. In Columbia Township, same county, the Wiser Oil Co. has started drilling No. 1 on the northeast corner of the L. Ring 14 acres, Section 32, and the East Ohio Gas Co. made a location for a test on the southwest corner of the J. E. Greenwalt 17 acres, Lot 31.

In Cannan Township, Wayne County, the Burbank Gas Co. drilled in a light gas well at No. 2 on the R. C. Cockrell farm, Section 5. The Ohio Fuel Gas Co. drilled a light gas well at No. 2 E. J. Betts farm, Section 16, while William Denny and others got an exceptionally large gas well at a test on the northeast corner of the H. Rock 28 acres, Section 24. The Logan Gas Co. is drilling No. 2 located 585 feet from the south line and 100 feet from the southwest corner of the Jacob Sell 154 acres, Section 17. In Congress Township, Hulse & Kundtz drilled a light gas well at No. 2 Mary M. Shilling farm, Section 8. In Milton Township, the East Ohio Gas Co. made a location for a test on the northwest corner of the C. W. and L. B. Frick 80 acres, Section 21.

In Newcastle Township, Coshoction County, Bell Brothers and others' No. 3 on the Cassingham-Herbig 315 acres, Section 10, is only a fair gas well.

In Monroe Township, Holmes County, the East Ohio Gas Co. drilled a very good gas well in No. 2 Albert Mackey farm, Lot 6, and made location for No. 3 on the southwest corner of the M. G. Bird 50 acres, Lot 8, as well as for No. 4, located 400 feet from the south line and 900 feet from the east line of the C. M. Shank 149 acres, Lot 10. The Klise-Eckstein-McCann Co. made a location for a test in the northwest corner of the W. C. and L. V. Armstrong 20 acres, Lot 4. Empire Gas & Fuel Co. started the drill at its test on the northwest corner of the Elmer E. Conner 100 acres, Lot 14. In Hardy Township, same county, the East Ohio Gas Co. found a fair gas well at a test on the Harvey Bell farm, Lot 29, and made a location for No. 3 on the northwest corner of the W. H. Uhl 20 acres, Lot 22. Same company made a location for a test 1,000 feet from the south line and 300 feet from the west line of the W. M. Manchester 84 acres, Lot 3.

In Carthage Township, Athens County, McBride and others are drilling No. 2, located 50 feet from the north line and 938 feet from the east line of the J. McKinley farm, Section 3.

The Logan Gas Co. is starting a wildcat well 1,290 feet from the north line and 645 feet from the east line of the Henry H. Thudium 45 acres, Lot 2 New London Township, Huron County. The outcome of this venture will be watched with much interest, being north of the western edge of the gas field.

Offside Development

In Barlow Township, Washington County, William Waterson and others' No. 1 Neal McKay farm, is credited with 300,000 feet from the Maxon sand at 1,192 feet, but may be drilled to a lower formation. The Muskingum Gas Co. has been delayed by a fishing job at around 300 feet at No. 1, located 650 feet from the south line and 300 feet from the west line of the George M. Lanachan 161 acres, in Fractional Section 1029, same township. In the same township, the

(Continued on Page 88B)

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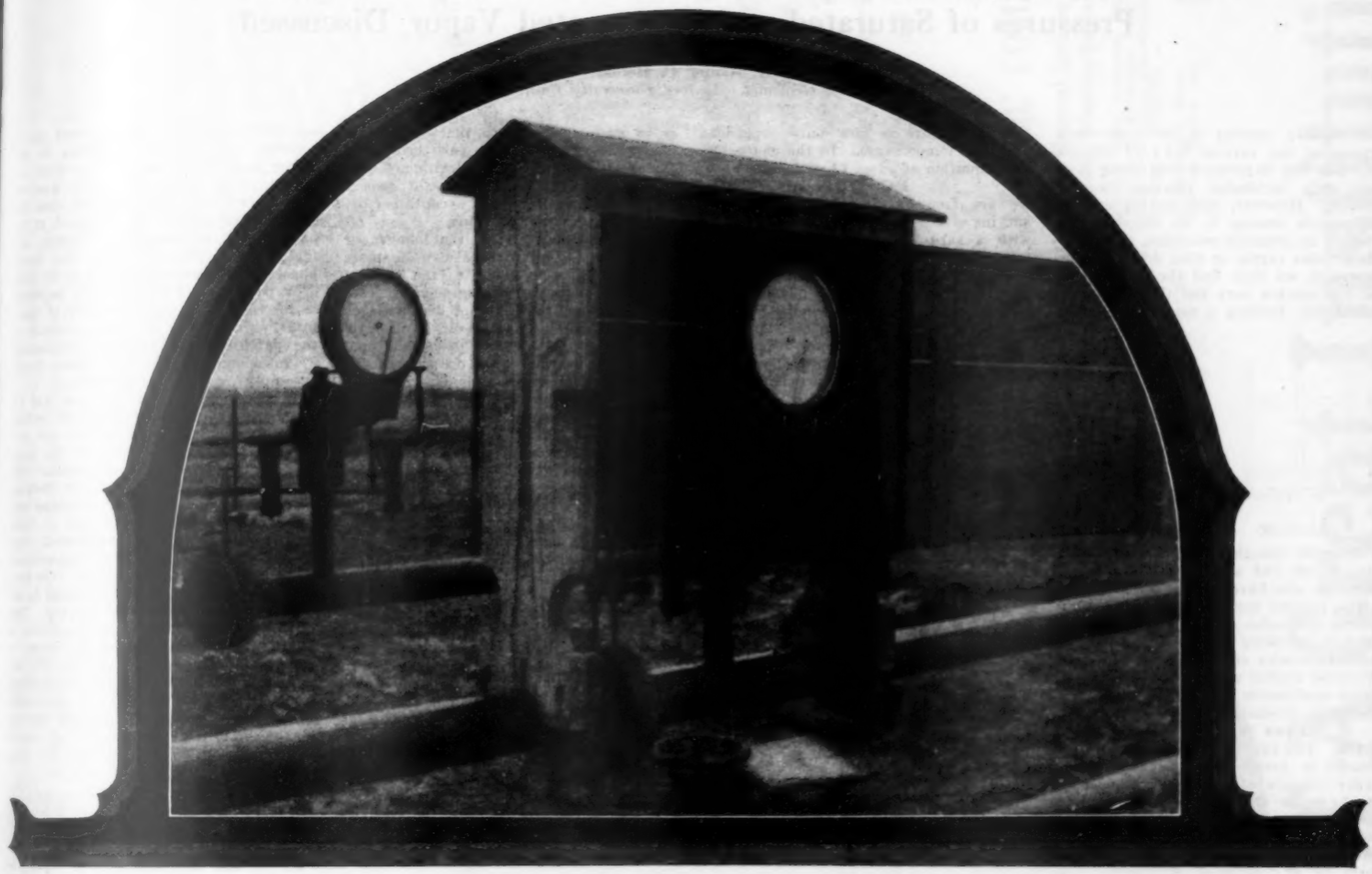

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METRIC METAL WORKS

Fluid Delivery From Oil and Gas Wells

Various Laws of Physics Found to Be Closely Associated. Pressures of Saturated and Unsaturated Vapor Discussed

By Stanley C. Herold
Petroleum Geologist, Stanford University California

A cursory reading of the statements expressing the various laws of physics may give the impression that these laws bear only incidental relation to one another. However, once having entered the portals leading to an investigation, whether in chemical reactions, steam engines, water supply or fluid delivery from reservoirs, we soon find the laws touching one another here and there, weaving in and out, forming a network of fabric

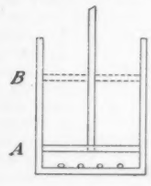


Figure 186

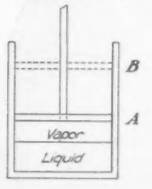


Figure 187

of scientific thought wrought by the brilliant minds and skillful hands of those scientists who have led the way.

The present installment concludes the specific discussion on the laws of physics. As with preceding laws, vaporization and thermodynamics cover an immense field. We must confine ourselves to features of direct application to the performance of reservoirs producing oil, gas and water.

Laws of Vaporization

185. The subject of vapors was briefly treated in Article 105. Each particular vapor consists of homogenous molecules of the same chemical composition. Its own liquid possesses identical molecules; only the physical state has been changed from that of a gaseous form to a liquid form by a diminution of the distances between the molecules. Three cases must be considered; as follows:

(a) A single vapor with its own liquid in a container.

(b) A series of vapors with their own liquids in a container.

(c) A vapor in the presence of a permanent gas in a container.

186. Case (a). Suppose a few drops of water are placed in a cylindrical vessel as illustrated in Figure 186, the closed volume of which may be varied at will by raising or lowering the piston. In a few moments the water will evaporate and entirely fill the space, with the piston in a position at A, with aqueous vapor. This vapor will exert a certain pressure upon the walls of the vessel and when the volume is altered by moving the piston to any position, B, the product of the pressure and volume will remain constant in accordance with Boyle's Law, provided the temperature is maintained at a constant value. Such a vapor is said to be in an unsaturated condition.

187. If a comparatively large quantity of water is now placed in the container, as shown in Figure 187, only a part of it will evaporate. Alteration of the volume occupied by the vapor when the piston is moved, say from A to B, will produce no change of pressure; the volume will only determine the comparative number of molecules in one or the other state. Any excess of molecules will leave or reenter the liquid as the volume is increased or decreased, respectively. The vapor, under these conditions, is said to be saturated. The change going on within the container as the piston is moved may be represented by the following expression:

$$\text{Liquid} \rightleftharpoons \text{Vapor}$$

The statement may be made that, "The pressure of a saturated vapor in the presence of its own liquid is independent of the volume which the two occupy."

The pressure is now only dependent upon the temperature. In the characteristic equation of gases (Article 135):

$$PV = MBT$$

we are free to alter the pressure by varying either V or T. Thus, in dealing with a saturated vapor, one degree of freedom has been lost.

Vapor Has Two Phases

In the language of the physicist and chemist, when saturated conditions exist, the vapor is said to have two "phases." a liquid and a gaseous one. (The term is not liable to become confused with our use of the word in the expressions, absolute and potential phases.)

188. For a given temperature a saturated vapor exerts a definite pressure upon the walls of the vessel confining it. This pressure is termed "vapor pressure" or sometimes "Vapor Tension." Different vapors have different vapor pressures at the same temperature.

Above a certain critical temperature for each vapor, no amount of pressure will force it to become liquefied, although for any temperature less than the critical

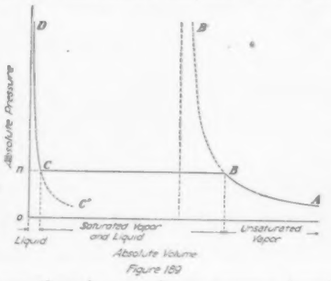


Figure 189

one, there is a maximum pressure (equal to the vapor pressure for the particular temperature) which can be exerted upon the vapor in contact with its own liquid and still retain the two phases. Above this maximum pressure only the liquid phase exists.

189. In Figure 189 is shown a pressure-volume diagram for a vapor. The broken curve, DCBA, represents an isothermal expansion of a vapor when subjected to various pressures. It is a diagram in absolute phase.

Taking the curve in the reverse order, ABCD represents the isothermal of the same vapor. AB is a rectangular hyperbola for the unsaturated vapor which behaves as a permanent gas from absolute zero pressure up to a definite point n, the vapor pressure at the given temperature. At B the curve breaks on the attempt to increase the pressure by further diminishing the volume. Instead of continuing the path of the permanent gas toward B,' the curve proceeds along the straight horizontal line toward C and the container, in the meanwhile, holds both saturated vapor and its liquid. Arriving at C, all vapor has become liquefied; the curve breaks again, traveling toward D on the path of the rectangular hyperbola for the compression of a liquid. On expansion, a "permanent" liquid would have the path DCC.' The horizontal scale for the section pertaining to liquid alone is exaggerated. In an actual case the line CD appears vertically straight to the eye.

190. A series of isothermals for a given fluid which exists in the liquid and vapor phase is shown in Figure 190. The lines; 1, 2, 3, etc., represent successive increases in temperature. The critical, temperature, above which no liquefaction of the vapor can take place at any pressure, is represented by the isothermal curve, 6. For curves 7, 8, etc., the fluid is at such temperature that it behaves exactly as a permanent gas throughout the range of pressures and volumes.

191. Case (b). A series of vapors with their own liquids in a container.

Vapor Pressure

Henri Regnault found that the vapor pressure of a mixture of two or more volatile liquids is equal to the sum of the vapor pressures of the separate constituents when these do not dissolve each other. Suppose a reservoir to contain water and one natural petroleum constituent; then the vapor pressure of the water and oil together is equal to the sum of the vapor pressures of the water and oil separately.

Where the liquids dissolve each other, the vapor pressure of the mixture is less than the sum of the vapor pressures of the constituents. In some mixtures the combined vapor pressure might even be less than that of any of its constituents. Natural petroleum constituents are solvents of one another.

No matter how complicated a chemical compound natural petroleum may be, it certainly possesses a definite vapor pressure which may be determined, as of the temperature of the reservoir, by experiment. Our problem does not require the determination of the vapor pressures of the various constituents. We may treat natural petroleum as a homogenous fluid.

In the above statement regarding the supposed reservoir containing "water and one natural petroleum constituent," the latter qualification was, in truth, unnecessary. Substitute in its place, "water and natural petroleum."

192. Case (c). A vapor in the presence of a permanent gas in a container.

Regnault's experiments included the

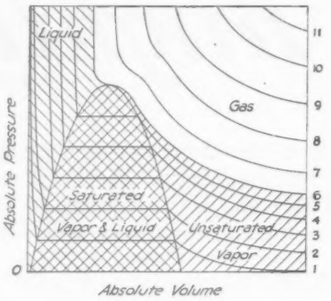


Figure 190

determination of vapor pressures in the following cases:

First, the vapor was distributed throughout an otherwise empty space.

Second, the vapor was distributed through a space containing one or more permanent gases.

Pressure of Mixture

Dalton had previously stated the law thus: "The pressure exerted by a mixture of gas and vapor is equal to the sum of the pressures of the gas and the vapor, for the given volume and temperature." Regnault verified the law and found it to apply to both saturated and unsaturated vapors. The pressure exerted by the vapor is the same whether the space through which it is distributed is otherwise empty or is occupied by one or more permanent gases.

193. The three cases, singly or in combination, cover conditions found in any particular oil or gas field.

Within the short range of temperatures for well reservoirs, the following difference between gases and vapors is observed: Permanent gas is forced into a solution by pressure according to the Henry van't Hoff law. The pressure required to force all of a given quantity of gas into a liquid depends upon the solubility of the gas in the liquid, at the particular temperature. Vapors are forced into solution (its own liquid phase) by pressure according to the laws of vaporization. The pressure necessary to force all of a given quantity of vapor into liquid form is the vapor pressure at the particular temperature, accompanied by sufficient diminution of volume to accomplish complete liquefaction.

If a permanent gas, a vapor and oil are together in a reservoir, the critical pressure required to force all the permanent gas into solution is the same pressure required to accomplish the liquefaction of all the vapor, because there must be diminution of volume sufficient for the latter. As long as there is any permanent gas undissolved, some of the vapor molecules are disseminated throughout the space which it (the gas) occupies, exerting its own pressure in addition to the pressure of the gas. Not until all permanent gas is in solution is there sufficient diminution of volume to force all the vapor into the liquid state.

In Figure 143, the point "n" marked the critical pressure for all permanent gas in the reservoir. It therefore likewise marks the critical pressure for all vapors which may be present within the same reservoir.

Dalton's Law

194. When any number of gases and vapors are confined in the same vessel, each is said to exert its own partial pressure against the walls of the vessel. The fact that some of the fluids are permanent and others vapors makes no difference. As a matter of truth, Dalton's Law (Article 120) holds for both gaseous fluids. The mixture may be composed of two or more permanent gases, two or more vapors, or combinations of permanent gases and vapors.

195. The experiment discussed in Article 123 (Boyle's Law, Absolute Phase) was performed with a permanent gas, assumed perfect for the purposes of demonstration. The isothermal expansion curve had the formula:

$$PV = K$$

If, within the container with which this formula is being tested with permanent gas, there is now introduced a vapor, the pressure corresponding to any volume of the gas will be increased throughout the experiment by the constant pressure of the vapor at the particular temperature. The isothermal for

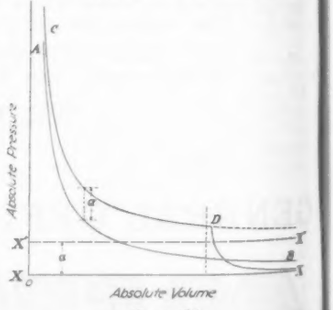
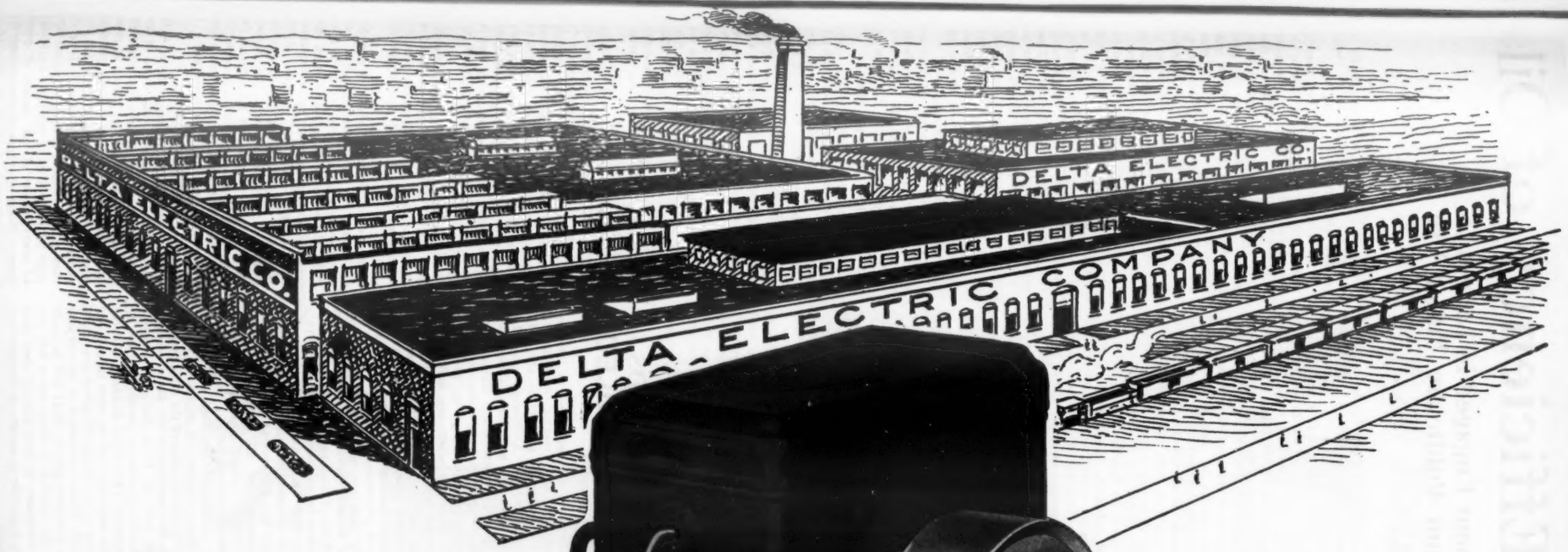


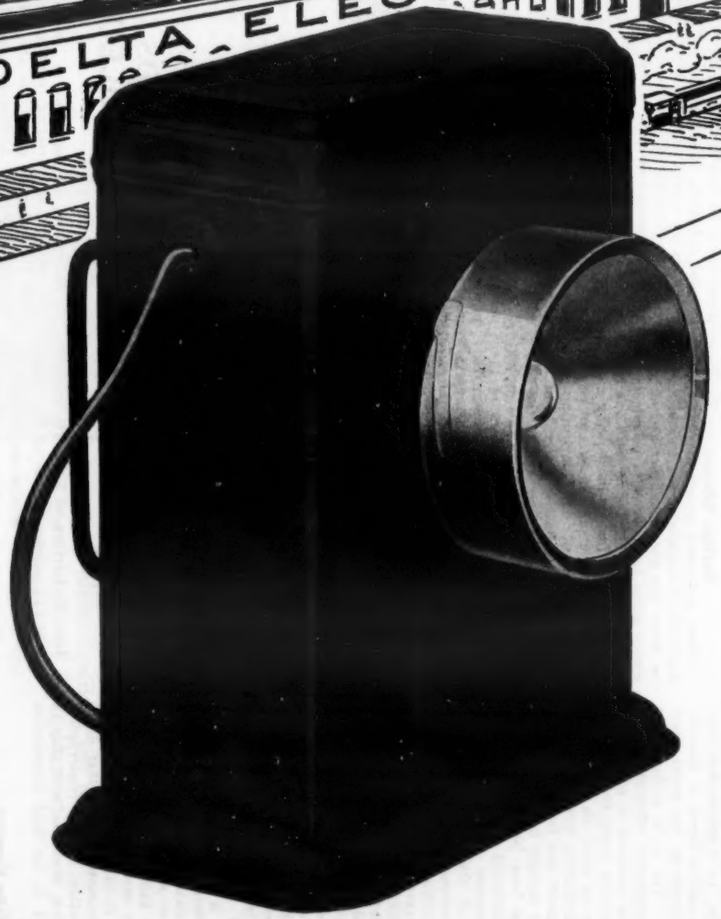
Figure 195

the mixture bears a simple relation to the isothermal of the permanent gas alone.

In Figure 195 the curve AB is identical to that illustrated in Figure 123. The curve CD either may be determined

(Continued on Page 74)





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Doubling Working Efficiency of Oil

Scientific Bureaus of the Government Engaged in Labors to That End. Savings to Industry and Public by Fuller Use

By Charles E. Kern

WASHINGTON, D. C., Mar. 2.—How to double the working efficiency of a barrel of petroleum is the problem toward which the scientific bureaus of the Government are working. The great public, including the oil industry itself, has never fully realized the perfectly practical suggestion that the oil production of the world may be doubled in effect by doubling the working efficiency of every barrel of oil through scientific research and the application of its results. If by any chance or fortune, which seems utterly impossible to realize, the petroleum output of the United States should, within a few years, jump from something like 750,000,000 bbls. to 1,500,000,000 bbls. there would be such a flurry in financial and business circles as has never been known before. Yet it is a fact that gradually the productive efficiency of the oil that is being produced is progressing in a way to actually bring about in mechanical energy as great an increase as if the barrel production were doubled.

This is a difficult idea for many people to grasp. The thought is not new. Its application has long been the goal of hundreds of specialists who believe it is possible to increase gradually the efficient power of the petroleum output 100 per cent, although they have not, ordinarily, put forward this particular illustration to express the value of systematic and continued research.

Whatever may be accomplished along this line of endeavor will be a reflection of the broadminded vision of President Coolidge, whose creation of the Federal Oil Conservation Board will be one of the great instrumentalities for bringing about these results. The mind of President Coolidge is alert to the tremendous advantages of conservation which he knows means a great deal more than holding some natural resource untouched in its natural state so that future generations may have an opportunity to exploit it. He knows that conservation means the best care of the article to be conserved and its most efficient use. This is really the animating spirit that dominated the creation of this conservation board and which, doubtless, will play an important part in the final formulation of its plans.

False Economy

Strange to say, the appropriations recommended to Congress for the conduct of its scientific bureaus working upon the problems of petroleum for the next fiscal year have been materially reduced below the appropriation of the current fiscal year. When this matter has been more fully discussed, it is to be expected appropriations for this class of work will be provided on an ascending scale, until they reach a point where the maximum amount of scientific effort may be economically employed. When one realizes that for 30 years the United States Congress has been renting privately owned buildings, in Washington City, for the conduct of its business, at rates that have yielded for these private owners more than double the amount of interest that the Government has paid on its loans, it can be understood it is very hard to drive a self-evident fact into the minds of some men. For the last 20 years there has been going on here a campaign of education to impress better business methods upon Congress with the idea that the Government should cut out these high rentals and construct its better workshops with its own money, thus making a large saving. Only in the present year has this campaign of education been so far advanced as to permit of a definite plan for housing the Government employes wholly in Government buildings. At this time, the activities of the Department of Agriculture in this city are actually scattered in 40 buildings, nearly all of which are privately owned. The Government Oil Conservation Board is just as distinctly a measure of national economy for constructive conservation as has been the policy to house Government employes in Government owned buildings instead of disbursing large rentals to hundreds of owners of private property.

The conservation board and President Coolidge, who conceived the idea of its creation probably will work very much more rapidly in achieving results than many people have hoped for in the past.

Savings Effected

There are many proofs available coming from all sections of the United States to show the enormous increase of efficiency given to a barrel of petroleum by scientific research. Today word has been received from Minneapolis showing a saving of $10,000 per annum by that city in the purchase of its lubricating oil. Alderman A. G. Bastis, chairman of the Ways and Means Committee, of the City Council of Minneapolis, states this saving has been made in the purchases of the city's lubricating oil for its motorized equipment by the adoption of the specifications prepared by the Federal Bureau of Standards. The bureau's specifications have been adopted following several months of tests with trucks in the Twelfth Ward of Minneapolis. Analyses were made of various oils by the University of Minnesota and up to this time the city has been using various types of lubricating oil—some costing as high as 85 cents per gallon. Under the new specifications which were worked out by a body of scientists as a result of many experiments and verification of their conclusions, the city will obtain its oil at a price and use it under measures of economy that will make a clear saving of the amount indicated.

This one illustration of a saving gives a typical example of the broadcasting of profits by this scientific work. No one can be accused of obtaining a monopoly of these advantages. The oil industry itself should profit by the giving of greater efficiency to the product and the public at large profits by getting more work done for its expenditure. In a very strict sense this is broadcasting profits in which everyone from the producer to the ultimate consumer shares. At the present time the Bureau of Standards alone employs about 50 men on the work of industrial research, representing an expenditure of approximately $200,000 annually in Washington, their work being that of industrial research alone.

Value of Work

The value of the work by this body of scientists is illustrated by numerous examples. One of these relates to the brake linings used on motor cars. At the request and in cooperation with the Motor Transport Corps of the Army testing apparatus was developed and used to improve the average brake lining on the market nearly four-fold and it is now claimed the manufacturers of these linings are able to make a profit seven times as good as formerly. The saving and cost of brake lining to the public is conservatively placed at $15,000,000 annually. This says nothing of the efficiency of the brake in saving life and limb by the avoidance of accidents.

Comparative investigations were made by the bureau on the power loss in cord and fabric tires and with its cooperation manufacturers have practically succedeed in the eliminating of fabric tires from the market. By the adoption of the cord tire as standard the saving in gasoline to the public has been estimated to amount to over $40,000,000 annually.

Standards of motor fuel have been the subject of investigations sought by the petroleum industry and the automobile industry jointly. The result of these investigations has been acceptable to both parties and it is believed more than $100,000,000 worth of gasoline will be made annually from the same amount of crude oil. The oil industry itself is very familiar with this work of standardization brought about by the Committee on Standardization in conjunction with the experimental work done by the bureau. The Bureau of Standards provided the head of the Federal Specifications Board and is responsible for the testing. The federal purchases under these standards amount to about $260,000,000 annually. One large railroad system allows 2 per cent of its purchase expenditure for inspection and testing but if the Government were to operate five times as efficiently as the railroad in question there should be allowed over a million dollars annually for this service instead of less than $200,000 as at present.

The number of bureau employes engaged on testing work is now practically the same as in 1916 while the needs have practically doubled in the meantime.

What Might Be Done

Just what this bureau might accomplish if given more ample personnel and equipment is problematical, but there seems to be no doubt that with larger opportunity the saving to the public at large and to all the industries affected would be enormous. The research work conducted by the bureau and other laboratories may be divided into two general classes: Industrial research, which has immediate practical application and basic or scientific research in which there is no immediate useful purpose. While this basic research is not immediately apparent its value is no less certain judged by experience.

What the bureau may be able to do for the petroleum industry may be understood by some of the things accomplished in other lines of business. For instance, tests have been completed on elevator interlocks which have made it possible for practically all manufacturers to improve their product. There is good authority for believing that the insurance cost on elevators will be cut over $500,000 annually by this work.

The national secretary of the association dealing in hosiery has estimated as the saving from standardization of hosiery containers a saving of $15,000,000 annually.

In the purchase of one year's supply of varnish it has been estimated that one Government department saved $70,000. Less than two years' work has resulted in a saving to the Government amounting to $100,000 a year in its telephone bill, all brought about by the work of these men. The 400 trained scientists working in all branches of the Bureau of Standard have an opportunity to succeed in their ambition to standardize and reduce costs that is remarkable.

Scope of Efforts

Only by intimate acquaintance with the efficient work and the scope of the efforts of this body of scientists can their work be properly valued. Some of these investigations may not, to the practical man in the field, suggest their full importance upon first thought. However, they are all tending toward a general purpose which is a more complete knowledge of every phase of the nature of petroleum. Some of these investigations are

(Continued on Page 86)

IMPORTANCE OF IMPROVED METHODS OF RECOVERY OF CRUDE PETROLEUM

John M. Lovejoy, of Tulsa, chairman of the Mid-Continent section of the American Institute of Mining and Metallurgical Engineers, in a letter addressed to members on the subject of the proposed activities of the Mid-Continent section for this year mentions the position of the petroleum division of the institute in the oil industry and outlined the possibilities of the field of endeavor that it will attempt to cover. Mr. Lovejoy says:

"We feel that technical work towards improved methods of recovery of crude oil has been, indeed, sadly neglected. When compared with the rapid strides made in petroleum geology, refining methods and casinghead gasoline manufacturing processes, the lack of progress in this branch of engineering is quite apparent. Due to low prices of crude oil for the past three years, there has been, after all, very little inceitive for any great amount of work of this nature. Economic pressure is usually the force behind improved technique. For example, the establishing of the gravity price basis for Mid-Continent crude two years ago caused more rapid and complete improvement in the handling of crude oil above the ground than would have been done in many years without the price advantage and yet the methods adopted are a conservation and saving to the operator even though there were no price differential. It is thought that whenever a high crude price level is again reached and maintained that rapid advancement will be made in petroleum engineering.

"Executives are beginning to look for men capable of directing experimental work for improved production and drilling methods. In California probably more progress has been made along these lines than anywhere else. There many company engineers have complete charge of certain departments of the production work. Some geologists are finding that they prefer technical work of this nature to their more scientific labors in geology. These signs point to increasing numbers gradually coming into and forming a group of petroleum engineers.

"The function of the American Institue of Metallurgical Engineers is to offer a medium of exchange of ideas for men interested in engineering subjects. This is done both by meetings and by publication of technical papers. The petroleum division has for several years conducted a symposium of oil production of the world at its annual meeting. The Mid-Continent section has in the past had many interesting meetings and will in the future continue its efforts to enlarge this important group of the oil industry."

The first meeting of the Mid-Continent section held in Tulsa Saturday evening was mainly devoted to matters pertaining to improved production methods. All the regular meetings will be open to any one desirous of attending. Members are urged to notify friends interested in the subjects to be discussed and an effort will be made at every meeting to bring out a full and free discussion so that general good may result from the exchange of theories and practices.

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MEN KNOWN IN OILDOM

Howard F. Nash

Howard F. Nash, general manager of the National Petroleum Corporation, a Doherty interest in Mexico, with headquarters at Tampico, was born in Sheldon, Iowa, May 26, 1885. He was graduated with the class of 1910 from the geological and mining courses of Stanford University. Then followed two years of the real thing wherein he worked as mucker, miner, timberman and assistant engineer in the McNamara & Belmont mines at Tonopah, Nev. He next made a tour of prospecting in northwestern Montana, and worked as millman and assistant geologist for the Butte & Superior Copper Company of Butte, followed by other mine examination work in the Rocky Mountain region.

In January, 1913, Mr. Nash went to Venezuela as field geologist for the Caribbean Petroleum Company, which marks his entrance into the petroleum field. In the fall of that year he was placed in charge of its operations in the Mene Grande Field, where he remained until the European war curtailed operations. Shortly afterwards he entered the Doherty service where he has been ever since, one short trip to Venezuela for the Levering interests excepted; and in this service he has done work in northern Mexico, Texas, Oklahoma, Wyoming and Montana. For Henry L. Doherty & Company he has been in Colombia and Venezuela. He came to Mexico as chief geologist for the Doherty subsidiary in 1919; and in January, 1920, he was made general manager of the Empire Gas & Fuel Company here. Of fine appearace, with a breezy good humor that surmounts obstacles and makes friends at one and the same time, there is no abler manager of a petroleum interest in the Mexican Republic.

PERSONAL PARAGRAPHS

Walter Wagner of Winfield, Kans., was a recent visitor in Tulsa.

* * *

J. E. Vaeth of the Danciger Oil & Refining Company, Wichita Falls, Tex., was a recent visitor in Tulsa.

* * *

Carl Nix and F. W. Schramm are in charge of the new office of H. L. Doherty & Company recently opened at Ponca City, Okla.

* * *

D. H. McCarthy is in charge of the new district office of the Prairie Oil & Gas Company recently opened at Ponca City, Okla.

* * *

John B. O'Connor, formerly with the Miller Gas Engine Company, has been placed in charge of the Texas sales territory for the Vacuum Oil Company. He will make his headquarters at Fort Worth.

T. O. McGoodwin has been elected to the board of directors of the Standard Oil Company of Kentucky to succeed T. C. Collins.

* * *

F. E. Holsten, vice president of the Barnsdall Refining Company, was recently called to Brooklyn, N. Y., by the death of his mother.

* * *

Daniel J. Danker, Boston oil operator, left Casper for Denver and points east on his return trip after visiting the Rocky Mountain fields.

* * *

G. F. O'Neill, who has been in charge of the land department of the Tidal Oil Company in Kansas for the past four years, has resigned.

* * *

T. L. Golay, president of the Matland Oil Company of Colorado, returned to Denver recently from a business trip to Ponca City and Tulsa.

* * *

W. D. Reynolds of Bartlesville, was a recent visitor in San Antonio, Tex. He was accompanied by Forest Rees and R. A. Hambly, geologists.

* * *

R. C. Gilliland, president of the Gilliland Oil Company, was recently called to Dallas, Tex., by the death of his mother-in-law, Mrs. A. K. Lucas.

* * *

J. C. Callahan of Okmulgee, land man for the Roxana Petroleum Corporation, was recently called to Hollywood, Calif., by the death of his father.

* * *

A. R. Marshall, general manager of the Petroleum Exploration Company of Tulsa, recently left for Artesia, N. M., to look over the oil field there.

* * *

J. A. Wolf of J. A. Wolf & Company of Chicago, Ill., is making a tour of the Mid-Continent fields in which his company owns producing and royalty interests.

* * *

Jacob France, president of the Mid-Continent Petroleum Corporation, formerly the Cosden Oil & Gas Company, left Tulsa recently on a business trip to New York.

* * *

Buford Wales has become stock man for the Independent Oil & Gas Company at Okmulgee, Okla. He was formerly with the International Supply Company at Tulsa.

* * *

A. L. Merritt and M. L. Edwards, officials of the E. T. Williams Oil Company with headquarters at Casper, Wyoming, made a business trip to the Big Horn Basin the past week.

* * *

C. O. Rison, engineer in charge of the Bureau of Mines office in Muskogee, Okla., has resigned effective March 15 to engage in consulting work for himself with offices in Bartlesville, Okla.

* * *

Charles C. Peake, accountant of the Transcontinental Oil Company, has been transferred from Pittsburgh, Pa., to Muskogee, Okla., where he is now accountant in chief of refineries.

* * *

T. E. Cottingham has been made general manager of the Mid-Continent Refining Company at Battle Creek, Mich. Mr. Cottingham was formerly associated with the Jewett & Sowers Oil Company of Chicago.

* * *

Edward J. Drake will be in charge of the new district office to be opened in Houston, Tex., by the Continental Supply Company. Plans for a new office and warehouse have been completed, and it is expected building will be started soon.

* * *

J. S. Barbee, independent operator in the fields of South Archer County, Texas, was a visitor the past week in Fort Worth, Tex. He states that Archer County operators are considerably disturbed over the water shortage which threatens to tie up operations unless there is immediate relief.

* * *

B. C. Armstrong of Big Lake was a recent visitor in Fort Worth. Mr. Armstrong is starting a well in Reagan County in Section 34, Block 11 of University lands, and is ready to spud in the well. He reports that wildcatting in the Reagan County territory is going to be much simplified by the presence at a comparatively shallow depth of a plentiful supply of water that is good for boiler use.

Walter McCloy, formerly with the Philadelphia Company, was a Tulsa visitor in Pittsburgh, Pa., recently.

* * *

L. E. Thomas, president of the Reading Iron Company, of Reading, Pa., was in Tulsa last week conferring with R. J. Tilley, the Tulsa representative.

* * *

With the reorganization of the Continental Oil Company of Denver, Colo., the following officers have been appointed, C. E. Strong, comptroller; E. S. Karstedt, vice president in charge of marketing; J. M. Hollister, general manager; L. R. Milne, sales manager, L. T. Cramer, assistant sales manager.

* * *

Carl J. von Bibra, formerly connected with the General Petroleum Corporation, has been appointed general manager of the Export Refining Corporation with headquarters in Los Angeles. Mr. von Bibra is widely known in West Coast marketing circles.

* * *

J. K. Fagin, formerly manager of the Chicago office of the White Oil Company, is now in the distributing business in Chicago, under the style of the Wojak Oil Company. He was at one time connected with the Republic Oil Company, which had a string of 14 filling stations in and near Chicago.

* * *

Fred A. Gillette, who has been operating in Oklahoma and Texas for a number of years, is moving back to Fort Worth. He lived there several years but has recently been making his home in Oklahoma, principally at El Reno and Tulsa. Mr. Gillette contemplates starting operations in Texas within a few weeks' time.

* * *

John J. Dempsey, of New York, formerly general manager of the Continental Asphalt & Petroleum Company, of Oklahoma City, has been in Oklahoma in the interest of oil properties controlled by himself and Eastern associates. He was accompanied by B. V. Swenson, a New York banker.

* * *

H. L. Garner and Mrs. Garner left Casper, Wyo., early this week for Los Angeles, Cal., where they will make their future home. Mr. Garner has been representing a firm of California oil operators in Casper for the past year, and will take charge of some new work by his firm on the Pacific Coast.

* * *

W. H. Breckenridge has succeeded A. Roy Allison as manager of the Chicago office of the Stevens Oil & Grease Company. Mr. Breckenridge was formerly of the Lloyd-Breckenridge Company, distributors and compounders of lubricating oils and greases. Mr. Allison is now sales manager at the Cleveland office of the company.

* * *

Edmund C. Breene, president of the Pennsylvania Grade Crude Oil Association and president of the Winona Oil Company, was operated on by Doctor Crile at Cleveland, Ohio, last week for goitre and is reported to be recovering. Mr. Breene has been in ill health for some time and with the removal of the goitre it is belived he will regain his health quickly.

* * *

John S. Griffin of Tulsa, independent oil operator and director of several large companies, left for New Mexico last week where he owns a large ranch. Oil development is getting close to Mr. Griffin's property there and while the purpose of his visit was not announced, he will probably give careful attention while in the Pecos Valley to the region's oil prospects.

* * *

After 40 years of loyal service with the Tide Water Oil Company, Fred Faulkner, assistant superintendent of the Bayonne plant, and general superintendent of the Tide Water Oil Company refinery at Bayonne, N. J., was retired on pension at his own request, his services ending on February 1. Mr. Faulkner started his career in the oil world as a pipe fitter's helper and is a notable example of the man starting at the bottom of the ladder, going forward and upward to the pinnacles of importance and responsibility. Mr. Faulkner's place will be filled by Frank Turbett, who has likewise given many years of service to the Tide Water Oil Company. On all cans leaving the Tide Water plant containing "Veedol" is stamped the words "Faulkner Process." Mr. Faulkner conceived the method of the process that brought about "Veedol" in 1918.

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NATURAL GAS DEVELOPMENTS

CARBON BLACK LAW PROPOSED IN TEXAS

AUSTIN, Tex., Feb. 28.—The utilization of natural gas for the manufacture of carbon black will be permitted in Texas where the Railroad Commission authorizes its burning for this use under a bill prepared for information in the House by interests in Panhandle natural gas field.

Introduction of this bill forecasts a fight similar to the battle in the House two years ago over a carbon black bill wanted by gas interests in Panola and east Texas counties producing natural gas. The bill was killed by a close vote.

Under the present law the burning of natural gas to obtain the carbon black is prohibited, except of casinghead gas, from which the gasoline content has been removed. The proposed law prohibits carbon black plants except when allowed by special permit and hearing by the Railroad Commission.

The bill provides the following regulations on the burning of gas for carbon black manufacturers:

"Permits valid for five years from the date of issuance may be granted after hearing had upon petition with ample notice to the public, where it is made to appear by the evidence that there is no reasonable expectation, presently or in the near future, of the utilization of the gas for domestic or industrial purposes or where it is shown that the gas from the territory from which such carbon black plant is to be supplied is not sufficient in volume to justify its transportation for domestic or industrial use, or that it is impracticable to seal the gas and conserve it in its stratum until it is practicable to transport same and use it in domestic and industrial consumption provided that gas shall not be taken from any well for the purpose of the manufacture of carbon black to an amount exceeding 25 per cent of the daily potential capacity of such well.

"Whenever the supply of natural gas for domestic or industrial use for any city or town shall become inadequate or seriously endangered and the supply of which comes from any field in which permit or permits to burn gas for the manufacture of carbon black have been issued, the Railroad Commission may, upon petition and by appropriate order divert enough gas from carbon black manufacture to meet the present shortage or insure an adequate supply for the immediate future; provided that if the owner of gas so diverted and the pipe line company can not agree upon the price to be paid for the gas so diverted, then upon petition of either party to the controversy the Railroad Commission of Texas may, after hearing, fix the price to be paid for the diverted gas.

"In every petition for permit provided for in this act there must be set forth the name or names of the person or persons, firm, copartnership, association or corporation desiring same, the capital to be invested and whether paid in or to be thereafter subscribed and paid in; the location of the plant to be erected and its character, value and capacity; the location of the gas field from which the plant is to be supplied; its area, potential volume, rock pressure of known wells in the field, the character of the gas and generally every fact necessary to be determined in passing upon the application.

"Upon receipt of any application field under the provision of this act, the commission shall immediately set same down for hearing at some time not less than 15 nor more than 60 days from the date of filing of such application and shall issue notice to the public generally of such hearing setting out in such notice the date, time and place same will be held, and generally the matters to be considered.

"Nothing in this act shall be construed to repeal or in any manner affect Chapter 155, acts of the regular session of the Thirty-Sixth Legislature, the same being an act to conserve the oil and gas resources of the State of Texas, nor to repel or affect any rule, regulation or order of the Railroad Commission of Texas adopted or promulgated thereunder except where such law, rule, regulation or order is in conflict with the provisions of this act, and in case any such law, rule, regulation or order shall be in conflict with the provisions of this act, then same is hereby expressly repeated. The Railroad Commission shall have the authority to adopt rules and regulations for the development, handling and production of gas and the amount that may be taken from any well or wells for the purposes named in this act, and such other rules and regulations as may be necessary in the administration of this act, and for the protection of the field.

NEW TYPE OF GAS HOLDER USES SLIDING STEEL PISTON INSIDE

The new type of gas holder, said to be the first of its kind in America, erected for the Northern Indiana Gas & Electric Co., at Michigan City, Ind., has attracted the attention of gas company executives and engineers.

The holder has a capacity of 1,000,000 feet and is 105 feet in diameter and 160 feet in height. It is what is known as a "waterless" holder because no water is used for sealing purposes as is the practice in the type in universal use in this country.

Instead of sliding up and down in a huge steel frame as other holders do, and the "lifts" or sections telescoping like a collapsible driking cup, this new style of holder remains stationary and a steel piston inside the shell raises and lowers as the amount of gas in the holder varies. Gas is pumped into the holder from the bottom and pushes the piston up.

A tar preparation is used for sealing purposes where the piston slides against the inside wall of the holder. Tar which may seep through runs into a tank at the bottom of the holder and is returned by pumps automatically controlled.

A register on the side of the holder enables plant engineers to tell the amount of gas in the holder at all times.

On top of the roof is a glass enclosed inspection room or monitor 8 feet in diameter. Around the top of the holder just below the roof is a band of wired glass windows about 3 feet high. This admits light to the top of the holder above the piston in case it becomes necessary for workmen to enter the holder to make repairs or adjustments. An iron stairway leads from the ground to the roof and the monitor and there are three inspection galleries around the outside of the holder. There is no outer framework, the holder being built of plates of steel 20 feet long and 32 inches high.

This new design of holder was developed in Germany, the first one being erected in 1915. It is the invention of Conrad Jagschitz, director of Maschinenfabrik, Augsburg-Nurnberg, Germany. Forty-six holders of this new type are now in use in Germany, France and Holland. Contracts for the construction of others in the United States have been awarded, but the Michigan City holder of the Northern Indiana Gas & Electric Co. is the first one to be built and placed in operation.

The holder is so constructed that additional capacity may be added if needed at some future time. An additional 50 feet in height may be added, bringing its total height up to 210 feet and its capacity up to 1,350,000 feet.

MADE GENERAL MANAGER OF HOPE NATURAL GAS

PITTSBURGH, Pa., Feb. 28. — John B. Corrin, assistant general manager of the Hope Natural Gas Co., has been president and general manager. Mr. Corrin will have charge of the largest natural gas producing operations in the world.

Mr. Corrin for 35 years has been continuously in the employ of companies affiliated with the Standard Oil Co. of New Jersey. He was born at Franklin in 1869. He was educated there and entered the employ of the South Penn Oil Co. January 1, 1890. He later became connected with the Hope, Reserve and Connecting Gas Companies, becoming in 1906 asisstant superintendent. In 1912 he became a director of the Hope and in 1918 vice president and general manager of the Reserve, River and Connecting Gas Companies, president of the Hope Construction & Refining Co. and vice president of the Clarksburg Light & Heat Co. Mr. Corrin is president of the Natural Gas Association of America.

John B. Corrin

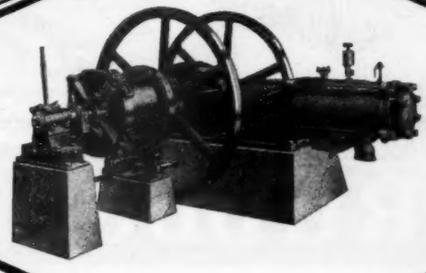
M'ALESTER GAS RATE CUT GOES TO COURT

OKLAHOMA CITY, Okla., Feb. 28.—A petition for a temporary restraining order preventing the enforcement of an order reducing the price of gas in McAlester from 60 to 45 cents per 1,000 feet was filed in United States district court here by attorneys for the McAlester Gas & Coke Co. of McAlester.

The petition alleges the reduction order was issued by the corporation commission solely at the request of a delegation of McAlester citizens and not upon evidence that the present rate is excessive. The order issued February 7 was made retroactive to cover January meter readings. The petition contends that the commission had no authority to issue a retroactive order.

The petition further alleges the gas company received no notice of the issuance of the reduction order and that they were denied the privilege to present their side of the case at the hearing on February 7.

It is also contended in the petition that in issuing the order the commission violated a previous agreement whereby no change would be made on the 60-cent rate until the completion of a hearing, which is pending before the commission regarding a permanent rate.



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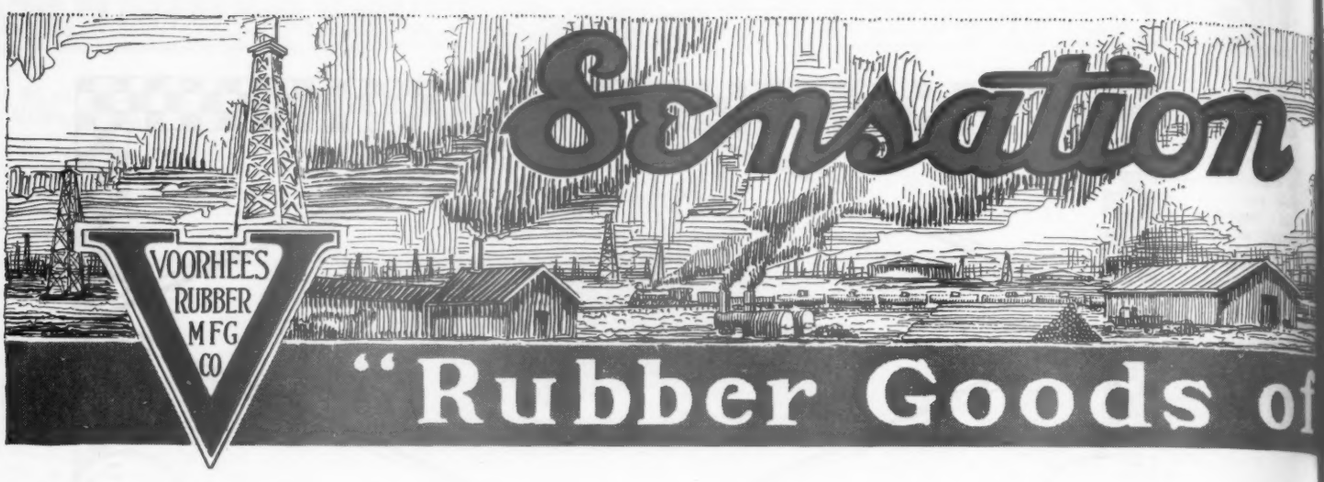

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SENSATION Belt drills more footage for its cost, and pumps more barrels of oil.

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EQUIPMENT AND SUPPLIES

CENTRIFUGAL PUMPS GIVEN THOROUGH TEST

An investigation of the performance of centrifugal pumps when pumping oils has been conducted for the Goulds Manufacturing Co., of Seneca Falls, N. Y., by Robert L. Daugherty, A. B. M. E., professor of mechanical and hydraulic engineering at the California Institute of Technology, and has been published in a pamphlet copyrighted by the company.

The investigation was conducted at the Los Angeles refinery of the Union Oil Co. of California to determine the variation in the characteristics of the centrifugal pump with liquids of different viscosities and vapor pressures. Aside from tests with water as a standard, the commodities used were oils of different viscosities, the primary objects of the tests being to determine the head, capacity and efficiency of a centrifugal pump as a function of the viscosity of the liquid handled by it.

The results of the tests are recorded on 18 full page diagrams which are largely self explanatory. They show among other things that the rising characteristic of the 3-stage pumps when water, light crude and hot residuum was pumped disappeared when cold residuum is pumped.

In these tests petroleum products ranging from gasoline to oil of 7,000 Saybolt viscosity were pumped. The various charts show the performance of centrifugal pumps when handling these commodities as compared with the performance when handling water.

OFFICERS SELECTED

W. P. Turner was reelected president of the Oil Country Specialties Co. at the regular annual stockholders' meeting held in the company's headquarters at Coffeyville, Kans. Other officers elected were: D. R. Brown, vice president, he having served as treasurer during the past year; J. E. Exner, treasurer, who served as vice president the past year, and N. A. Doolittle, secretary, he being reelected. W. R. Wilkerson of St. Louis, Mo., was reelected to the directorate. Reports of business for the past year and the outlook for the coming year, were highly gratifying to the owners of the manufacturing concern, a director said, following the meeting. The new machinery recently purchased, which is calculated to increase the output of the industry by 20 per cent, will be installed within a few days, it was explained.

AUSTIN GIVEN CONTRACT

The C, U. Williams Co. has awarded the Austin Co., of Cleveland, Ohio, a contract covering the design and construction of a new unit to its plant in Bloomington, Ill. All construction work and purchase of materials will be handled by the Austin Co. through its Chicago office.

The new building will be of a single story mill type construction known as an Austin No. 2 standard building. The frame, containing 60 tons of steel, carries a wooden roof of heavy lumber. Continuous sash along sides and monitor will assure a building of maximum natural light and ventilation. The entire project which will comprise nearly 30,000 square feet of floor space, is to be completed in 38 working days.

APPOINTS ASSISTANTS

The Barber-Greene Co. of Aurora, Ill., manufacturers of standardized material handling machines, has appointed H. H. Driver as assistant to J. A. Gurney, district manager of Pittsburgh, Pa.; Frank S. Howard as assistant to E. D. Cassel in the Cleveland, Ohio, district; and P. S. Frederick as assistant to C. B. Gould of Detroit, Mich.

OIL COUNTRY GOODS BUYING GAINS AS PROSPECTS FOR DRILLING GROW

By B. E. V. Luty

PITTSBURGH, Pa., March 2.—Business with the pipe mills, never in poor shape, has been improving from week to week, with the extra aid of large line pipe orders booked recently, and the pipe mills now have a very large trade. They are easily doing better than any other finishing branch of the steel industry, with an operation averaging above 90 per cent and a continued flow of orders from day to day.

Most of the pipe mills are operating practically full, merely with a furnace off now and then for repairs. Some of the mills have been accumulating stocks of butt weld merchant pipe, considering this desirable in view of the heavier distribution to ultimate consumers there will be in spring. Jobbers consider pipe prices somewhat high and have no thought that any advance will occur, hence they are indisposed to carry any extra stock, and this puts the burden of stock carrying on the mills.

Buying of oil country goods has been increasing right along, with the progress towards spring, and oil country jobbers have been accumulating some stocks. Their stocking is of conservative character, considering how promising are the prospects for drilling.

Steel Market Active

In the steel market as a whole there is much talk of dullness, but when it comes to actual figures of bookings a very fair degree of activity is seen. In part it is a case of the market seeming dull merely by contrast with the recent unusual activity, but there must always be action and reaction, and the market could not contiuously show more buying than consumption and production, as it did so conspicuously of late, particularly in December.

On the whole, steel mill operations have tapered off a trifle, but the decreases have been only in spots, particularly in the Youngstown district. The Pittsburgh district mills are running nearly if not quite as well as a month ago, when there had been six months of increases, while the Chicago district and southern mills are running fully as well as at any time. Approximately speaking, in the first two months of the year the steel industry run at about 90 per cent, and probably a trifle above this in the last fortnight of January and a trifle below it in the last fortnight of February. As the average operation during the two years 1923 and 1924 was about 74 per cent, and an eventual recession is to be expected. Consumption is increasing, but there was extra production for three months when buyers were replenishing stocks.

Price Advances Hold

Price advances in bars, shapes, plates, sheets and wire products made in November and December are holding without question. Advances made or announced in January on these same lines are holding to an extent, except in sheets, but there is not enough business being placed at them to furnish much of a test. Recent and current bookings represent chiefly specifications on contracts or the closing of orders on old options. In the case of sheets it has begun to look as if the January advance would never become entirely effective. It was intended to cover second quarter contracts, but mills slipped through so much business at the old prices that buyers have little occasion to make regular second quarter contracts at the advanced prices. This makes the sheet market in general quotable at 2.70 cents for blue annealed, 3.50 cents to 3.60 cents for black and 4.75 cents for galvanized, the advanced prices being $2 a ton higher. In automobile sheets the advance announced by various mills late in November, from 4.60 cents to 4.75 cents, does not seem to be holding to any great extent

The raw material markets have been very dull. Connellsville coke has shown no activity in spot, while there is no inquiry as to contracts. Pig iron has been dull for a long time and it looks as if there would be no regular second quarter contracting movement. Prices are steady but do not seem to be overly firm, at $22.50 for Bessemer, $22 for basic and $22 to $23 for foundry, f.o.b. valley furnaces.

The iron and steel scrap market has been very dull, but prices are unchanged, and the decline which began early in January may be over.

SEPARATE DEPARTMENT FOR RESEARCH WORK

Engineering research, that is, the study of the requirements for automatic control and other problems in various industries, including the oil industry, has recently assumed such importance in the activities of the C. J. Tagliabue Manufacturing Co., Brooklyn, N. Y., that these activities will in the future be carried on as a separate department, known as the engineering research department, to be headed by Victor Wichum, M. E. M. Wichum will also continue his duties as chief engineer.

The development work on indicating, recording and controlling instruments will continue to be carried on under Frank Bast, whose department is known as the experimental department. Development of oil-testing instruments continues with still closer cooperation with the A. S. T. M., A. P. I., N. P. A., and other bodies, R. M. Wilhelm, formerly of the Bureau of Standards, being in charge.

Daniel C. Day will work on some of the more important problems of the users of Tag instruments, under General Sales Manager Harvey D. Cooke.

William C. Begeebing now heads the division in charge of automotic controllers, dial indicating and recording thermometers.

NEW JACKET WATER COOLER

All oil and gas engine and compressor operators, and especially those who have been troubled by scale formation in engine jackets, or excessive oil consumption, sticking piston rings, cylinder scoring and the other evils arising from overheated cylinders, will be interested in the G-R Jacket Water Cooler.

This apparatus uses any source of raw water supply to cool the circulating water supply. A small amount of distilled water can therefore be continuously circulated through the jackets and the shell space of the cooler is a closed system, being cooled by the raw water passing through the cooler tubes.

Besides being highly efficient in its cooling action, this apparatus is particularly compact, and constructed so as to permit easy inspection and cleaning. Full information can be obtained by addressing the manufacturers, The Griscom-Russell Co., 90 West Street, New York.

NEW LUBRICATION PLAN

A pronounced improvement in power pump design has been announced by the Gardner Governor Co. The entire line of Gardner tower pumps are now being made in the new design, on which patents are pending.

The new idea is an entirely enclosed power end designed to bring about flood lubrication from a single oil reservoir, thus eliminating the necessity of frequent and tedious oiling and greasing of the pump in perhaps a dozen different places. The main driving gear runs partly submerged in oil and carries it to channels which distribute it in a continuous flood to all working parts of the power end. The statement of the makers that the pumps require oiling only once a month has been proved conservative.

Another advantage of the new design is cleanliness. Bearings and gears are given complete protection from dust and grit.

COLUMBIAN STEEL TANK IS BUILDING NEW PLANT

A new plant which will ultimately occupy three blocks in Kansas City, Mo., and the first unit of which will cost approximately $500,000, was begun last week by the Columbian Steel Tank Co. Three other buildings will be erected within the next two years, according to the construction program which calls for a total investment of $2,000,000. The new buildings are to be erected where the present plant now stands and as each unit is completed a part of the concern will be moved into it to permit the old buildings to be razed.

A. M. Griffin and G. I. Sanderlin, architect and engineer, a member of the Columbian company's staff, designed the first unit, which will occupy a frontage of 253 feet and will be 130 feet deep. It will be a three-story and basement fireproof building.

A. A. Kramer, head of the Columbian Co., began his career in Kansas as owner of a small tin shop in 1894. In 1906 he moved his shop to the present location. Three sons, William, Walter and C. A. Kramer, are associated in the business and a fourth is in the law school of Georgetown University preparatory to entering the business.

STEAM JACKETED PUMP FOR ASPHALTIC OILS

Well pumping asphaltic oils or other compounds too viscous to flow readily at atmospheric temperatures, the use of steam jacketed pipe and fittings insures a continuous conduit for the hot material, according to a booklet published by the Barber Asphalt Co., manufacturers of Iroquois steam-jacketed pipe, fittings and pumps. The Iroquois steam-jacketed pump was designed primarily for the handling of Trinidad asphalt which, in the refined condition, contains about 40 per cent of mineral matter.

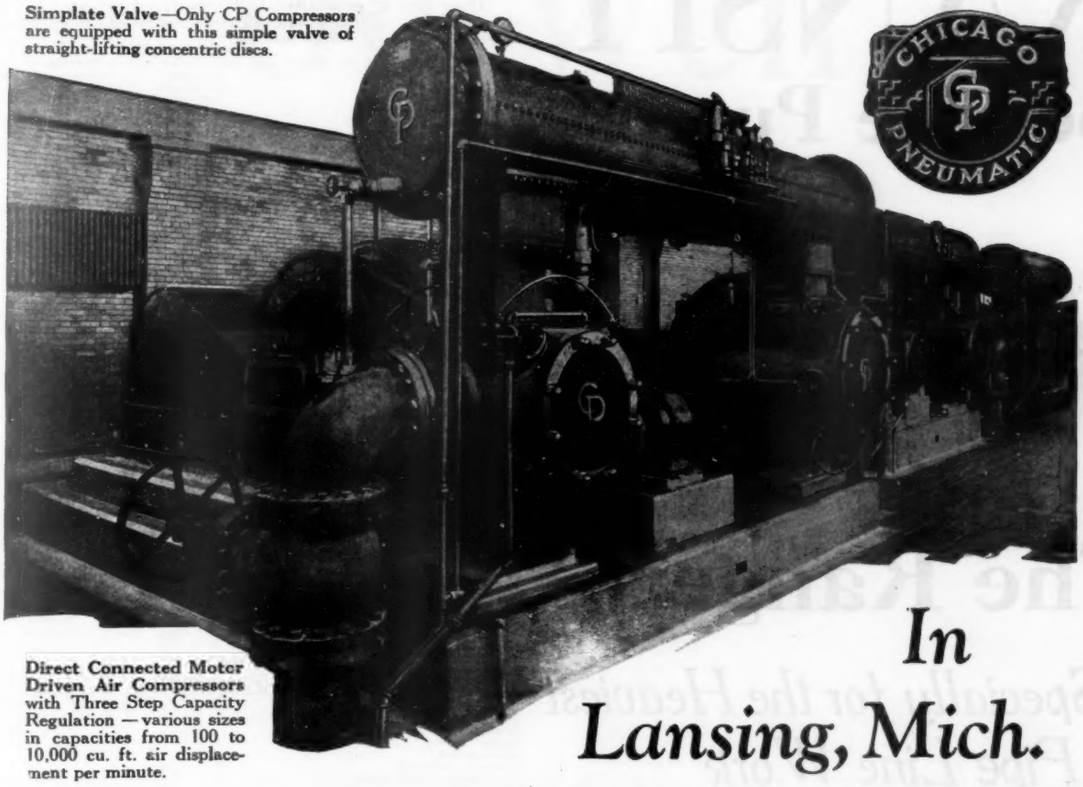
The pump is of the single-acting, plunger type, operated by means of direct-acting, steam cylinder. A steam-jacketed casing entirely surrounds the plunger, stuffing box and valves so that none of these parts can fail to operate due to cooling of the liquid.

Iroquois steam-jacketed pipe and fittings are designed for a working pressure of 150 pounds per square inch in the material pumped and steam pressure of 150 pounds in the jackets. All fittings are tested in the factory with 250 pounds hydraulic pressure and 175 pounds steam pressure per square inch.

NEW CATALOG

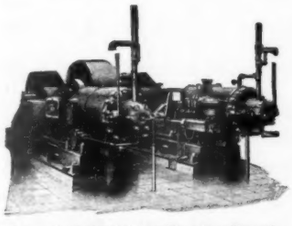
The new general catalog of the W. A. Jones Foundry & Machine Co., Chicago, Ill., is just off the press. It contains 448 pages of power transmission machinery data, including cut gears, cast gears, spur gear speed reducers, enclosed worm gear drives, cast iron pulleys, friction clutches, sprocket wheels, hangers, pillow blocks, couplings, rope sheaves, etc.

Simplate Valve—Only CP Compressors are equipped with this simple valve of straight-lifting concentric discs.



Direct Connected Motor Driven Air Compressors with Three Step Capacity Regulation — various sizes in capacities from 100 to 10,000 cu. ft. air displacement per minute.

In Lansing, Mich.



Class A-DO3 Giant Duplex Semi-Diesel Fuel Oil Engine — Furnish dependable power at less cost per hour, Giant Engines can be supplied in capacities of 20 to 200 H.P.

THESE Class O-CE Chicago Pneumatic Compressors, with a combined capacity of approximately 1000 horse-power, are operating Indiana Air-Lift pumps in the Riverside Pumping Station—part of the municipal water supply system of Lansing.

This equipment has actually doubled the water supply of existing wells and, at the same time—reduced maintenance costs to the absolute minimum.

Whatever your particular air power problem is—there is a Simplate Valve equipped, automatically regulated and self-lubricated Chicago Pneumatic Compressor in over 500 sizes and types to meet your requirements.

For valuable ready reference and for complete information—write today for Bulletins.

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*Barmingham, *Boston, *Chicago, *Cincinnati, *Cleveland, Dallas, Denver, *Detroit, El Paso, Houston, *Los Angeles, *Minneapolis, *New Orleans, *New York, *Philadelphia, *Pittsburgh, Richmond, Salt Lake City, *San Francisco, *Seattle, *St. Louis, Tulsa, *Berlin, *Bombay, *Brussels, *Buenos Aires, Calcutta, Christiania, Dairen, *Durban, *Havana, Helsingfors, Honolulu, *Johannesburg, Kobe, *London, Manila, *Milan, Moncton, *Montevideo, *Montreal, Osaka, Paris, Rio de Janeiro, *Rotterdam, Santiago, *Sao Paulo, Seoul, Tampico, Timmins, Tokyo, *Toronto, *Vancouver, *Winnipeg

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BOYER PNEUMATIC HAMMERS · · LITTLE GIANT PNEUMATIC AND ELECTRIC TOOLS
CHICAGO PNEUMATIC AIR COMPRESSORS · · VACUUM PUMPS · · PNEUMATIC HOISTS
GIANT OIL AND GAS ENGINES — ROCK DRILLS · · COAL DRILLS

CHICAGO PNEUMATIC

Depend upon that Name

TRANSIT
Pipe Line Pumps

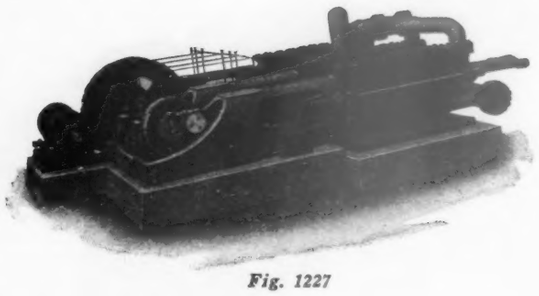

Fig. 1227

The Ranger

Built Specially for the Heaviest Pipe Line Work

5 x 18" Horizontal Power Pumps for 900 lbs. working pressure. Capacity 828 barrels per hour. 10" suction and 8" discharge connections.

Drive—either right or left hand, and on end or top of frame.

Sizes
5"-5½" x 18" and 5"-5½"-6"-6½" x 24".

We will be glad to describe these pumps in detail to any engineer on receipt of his request.

NATIONAL TRANSIT PUMP & MACHINE CO.

OIL CITY, PA.

District Offices:

NEW YORK PHILADELPHIA PITTSBURGH CLEVELAND
TULSA HOUSTON DENVER

Summary of California Oil Field Operations for January, 1925

According to figures collected by the American Petroleum Institute, Pacific Coast office, the total production of crude oil in California for January amounted to 18,743,288 bbls., an average of 604,622 bbls. per day. This is a decrease of 1,672 bbls. per day under December, 1924, production.

Total stocks of crude and all products in Pacific Coast territory increased during the month 2,985,806 barrels. The total stocks at the end of the month were 128,007,770 bbls. Comparative figures as of August 31, 1924, December 31, 1924 and January 31, 1925 are shown in detail.

There were 62 wells completed during the month with an initial daily production of 21,286 bbls., compared with 72 wells completed during December, 1924, with an initial production of 46,800 bbls.

PRODUCTION

(Figures for production and stocks are in barrels of 42 gallons.)

District—	Barrels Per Month	Daily Average Jan. 1925	Daily Average Dec. 1924	Daily Average Jan. 1924
Kern River	551,285	17,783	17,856	19,031
McKittrick	177,613	5,729	5,742	5,686
Midway-Sunset	3,283,272	105,918	106,161	84,033
Elk Hills	1,147,602	37,019	37,710	22,686
Lost Hills-Belridge	153,690	4,957	4,911	3,446
Coalinga	694,469	22,402	24,994	17,985
Wheeler Ridge	32,557	1,050	885	750
Watsonville	1,783	58	57	68
Santa Maria	233,330	7,527	7,478	8,211
Summerland	4,516	146	146	346
Ventura-Newhall	427,071	13,776	11,637	9,134
Los Angeles-Salt Lake	64,838	2,091	2,122	2,132
Whittier	68,210	2,200	1,957	2,041
Fullerton	372,221	12,007	11,511	9,795
Coyote	627,517	20,242	20,306	4,177
Santa Fe Springs	1,536,179	49,554	50,641	138,006
Montebello	602,277	19,428	17,485	17,966
Richfield	349,630	11,278	11,512	13,870
Huntington Beach	1,291,871	41,673	41,966	64,988
Long Beach	3,791,222	122,297	125,600	218,646
Torrance	1,295,416	41,788	44,942	51,393
Domingues	1,766,435	56,982	52,937	1,834
Rosecrans	263,268	8,495	7,638	.....
Inglewood	6,926	223	101	.....
Total	18,743,288	604,622	606,294	674,597
December, 1924	18,795,126	606,294		
Decrease	51,838	1,672		

STOCKS

	Jan. 31, 1925.	Dec. 31, 1924	Jan. Stock Increases	Aug. 31, 1924
Heavy crude, heavier than 20 degrees, A. P. I., including all grades of fuel	57,858,955	57,254,796	604,159	52,762,616
Refinable crude, 20 degrees, A.P.I., and lighter	42,262,361	40,574,578	1,687,783	41,041,685
Gasoline	11,748,056	10,957,487	790,569	9,566,446
Naphtha distillates	8,652,085	9,396,613	*744,528	11,863,797
All other stocks	7,486,313	6,838,490	647,823	5,589,973
Total, all stocks	128,007,770	125,021,964	2,985,806	120,818,637

*Decrease.

DEVELOPMENT

District—	New Rigs Up	Active Drg.	Comp.	Daily Initial Output	Active Prod.	Abd. Wells Drillers	Abd. Wells Prod.
Kern River	...	3	...	.....	2,173	..	..
McKittrick	...	11	1	25	296	..	..
Midway-Sunset	13	75	8	1,540	2,952	..	..
Elk Hills	1	9	1	170	261	..	1
Lost Hills-Belridge	2	2	...	.....	317	..	..
Coalinga	1	5	...	.....	1,027	..	1
Wheeler Ridge	2	4	2	220	15	3	..
Watsonville	...	...	...	.....	6	..	..
Santa Maria	1	7	...	.....	301	..	..
Summerland	...	...	...	.....	135	..	..
Ventura-Newhall	12	39	1	4,555	567	2	..
Los Angeles-Salt Lake	1	1	...	.....	396	..	..
Whittier	...	9	...	.....	178	..	..
Fullerton	2	2	1	640	390	..	..
Coyote	2	4	...	.....	229	..	..
Santa Fe Springs	...	3	1	198	355	4	..
Montebello	1	5	...	.....	158	1	2
Richfield	1	12	...	.....	174	..	..
Huntington Beach	3	15	2	95	309	2	1
Long Beach	1	25	6	532	534	4	1
Torrance	8	16	26	2,478	536	1	4
Domingues	2	26	5	6,806	44	1	..
Rosecrans	11	50	7	3,825	23	3	..
Inglewood	9	6	3	212	4	..	..
Miscellaneous Drilling	4	100	...	.....	....	4	..
January, 1925	77	429	62	21,286	11,280	25	10
December, 1924	73	432	72	46,800	11,319	18	35
Decrease	*4	3	10	25,514	*61	*7	25
Average for year 1924	103	510	102	42,412	10,903	28	21
Average for year 1923	111	759	82	114,690	8,928		24
Average for year 1922	115	605	67	43,700	9,410		17
Average for year 1921	90	536	57	15,631	9,425		14
Average for year 1920	77	403	49	14,126	9,299		13

*Increase.

NOVA SCOTIA HOPING FOR SHALE INDUSTRY

CHATHAM, Ont., Feb. 28.—For many years it has been known that Nova Scotia possesses some of the largest deposits of oil shale. Last year Professor A. E. Flynn of the Nova Scotia Technical College at Halifax was successful in mechanically separating the oil producing matter in oil shale from the rock. This was the first time this had been done and it opened up a new line of investigation in the treatment of oil shales. Application was made to the Council for Scientific and Industrial Research at Ottawa for assistance in carrying on this work and money was granted for continuing the work for one year. J. C. Dawson, who specialized in oil shale work, has been engaged as assistant to Professor Flynn.

The general line of investigation is to determine the characteristics of typical Nova Scotia oil shales and by treating the shales under different conditions of retorting to establish criteria that will be of value in the design and operation of commercial plants. A half-ton multiple deck rotary oil shale retort has been placed at the disposal of the college by H. P. Newcomb and A. B. Winchester of Halifax. They have also contributed the services of their engineer. As a result of the investigations so far the design of a commercial retort of this type is being modified to better adapt the machine to Nova Scotia shales.

Cooperation is also being extended by other individuals and concerns interested in the establishment of an oil shale industry in this Province. Ton lots of typical shales have been supplied by Oil & Nitrates, Ltd., who have considerable oil shale property in Pictou County and also by the Acadia Coal Co. of Stellarton.

HOUSTON GAS RATE CUT

HOUSTON, Tex., Feb. 28.—A 4-cent reduction in the gas rate here and a 14-year extension of the Houston Gas & Fuel Co.'s franchise were announced by Mayor Oscar F. Holcolmbe. The city will also share in the company's profits under the new plan. The extension was needed so the company might finance improvements with 30-year obligations. The franchise still has 16 years to run. Improvements costing $1,200,000 will be made by the company during the next two years.

Oil Well CASING

WE OWN and offer for sale an extraordinary bargain in 5,000 tons oil well casing, consisting of the following:

17,000 ft. 5 3-16″ 17-lb. DBX casing
40,000 ft. 6⅝″ 24-lb. DBX casing
92,000 ft. 8¼″ 28-lb. standard and 32-lb. DBX casing
80,000 ft. 10″ 40-lb. standard DBX casing
31,000 ft. 12½″ 50-lb. standard casing

located at railroad sidings, Breckenridge and Ranger, Texas, available for immediate shipment. (On account of its proximity to Gulf ports, advantageous rail and water rates can be had for export shipment, likewise to the Pacific Coast.)

PRACTICALLY all this casing is of two leading brands, used throughout the oil industry. We guarantee its condition to be 100% as good as new from the mill, both in grade and workmanship of the threads, couplings and thread protectors. This is not a lot of odds and ends of casing accumulated around the oil field, but, previous to our purchase, represented the inventory of one large oil concern. We will allow as thorough an inspection on this used casing as you would exact on new material from the mill.

While we represent this lot to be as serviceable as new, you will find the saving in price so great as to enable you to order not only for your immediate requirements, but for your future needs as well.

Also 50 miles 2″ to 8″ line pipe, and 30 miles ODEE plain end pipe for gas lines.

Main Office JOS. GREENSPON'S SONS IRON & STEEL CO.
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For immediate action,
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Branch Office:
Albert Lussier,
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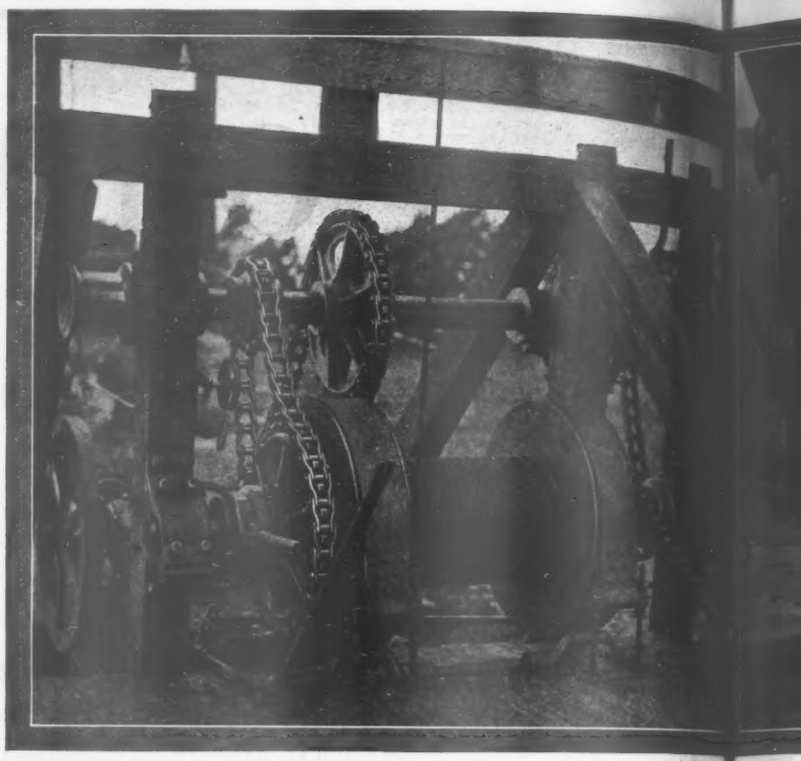

Frick-Reid Dreadnaught Rig by Link-Belt

Super Chains for

DRILLERS demanded chain of such superior, inbuilt ruggedness that remarkable performance would be *certain,* no matter what the strains and speeds might be.

Tests made with SS-40 PLUS and SS-124 PLUS prove that Link-Belt designing skill and experience, combined with especially selected materials, and unusual heat treating, have produced just what drillers wanted for unusually severe, continuous service. Link-Belt *Super* Chain banished the fear of lost time, and repairs.

These newest, most rugged of drilling chains are no heavier than the famous Link-Belt SS-40 and SS-124. *But* they are from 60% to 73% *stronger.*

LINK-BELT COMPANY,
Leading Manufacturers of Conveying and

SS 40+ LINK-BELT S

THIS YEAR

aught by Link-Belt SS-40 and SS-124 Chains

r Hard Drilling

Performance has already established the superiority of SS PLUS Chains. Drillers now specify them for jobs requiring *the highest speeds ever reached in drilling.*

Put a strand on your next rig. No further introduction—no additional evidence will be needed to have you continue using it on future work.

Be sure that every link bears the famous double arrow trade mark, emblem of Link-Belt's fifty years' experience—experience in designing and building chain, that gives you the combination every driller wants—speed—production—and economical performance. Remember that SS stands for *Super* Chain and *Super Service.*

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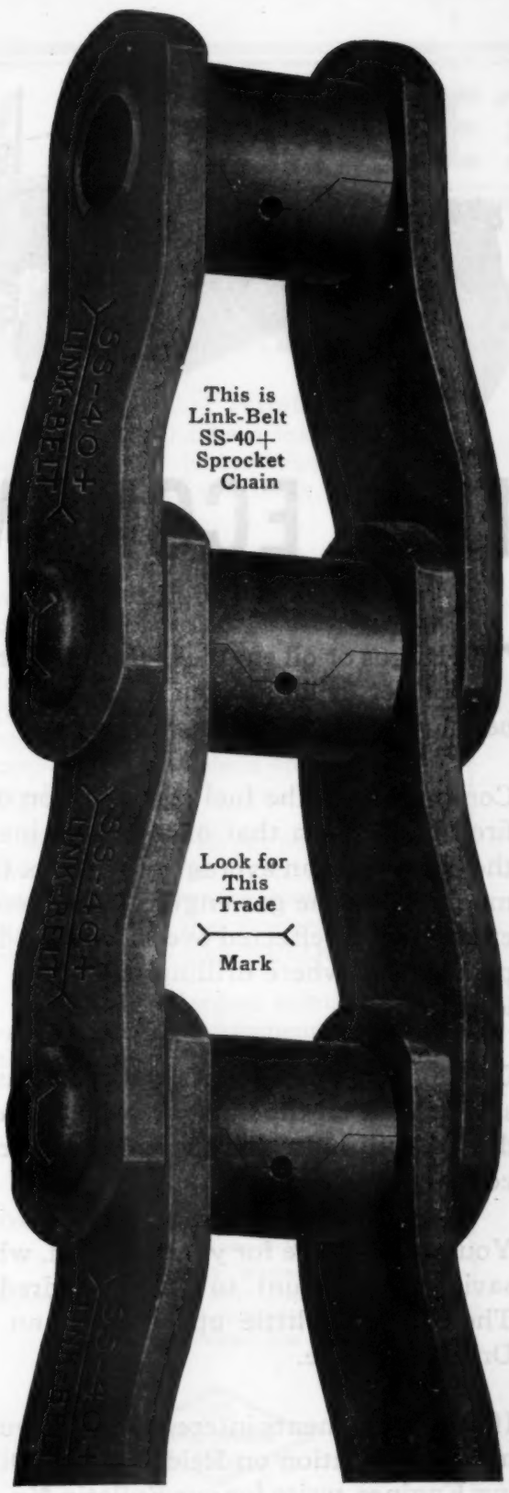

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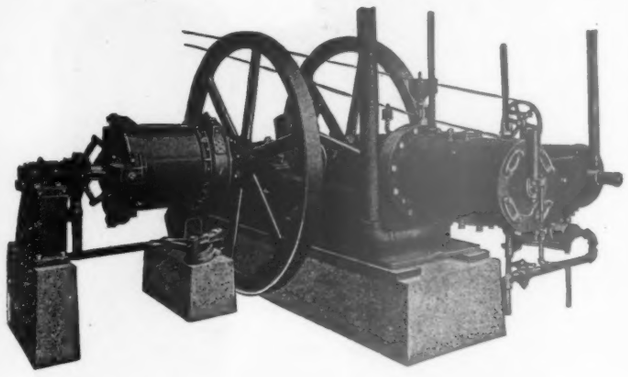
FIFTY YEARS OLD



FOR ECONOMY

THE gas or oil engine is the most economical for drilling. Our records for a number of years prove this statement.

Comparison of the fuel consumption of a gas fired boiler with that of a gas engine shows the boiler uses an average of over six times as much gas as the gas engine. An even greater economy is effected over a coal-fired boiler, particularly where drilling is done in remote locations.

Getting down to a dollars and cents basis, this saving, just on the first two or three wells drilled, will more than amount to the initial cost of the engine.

You can estimate for yourself then, what this saving will amount to on a hundred wells. There is very little upkeep cost on a Reid Drilling Engine.

If these statements interest you and you want more information on Reid Gas and Oil Drilling Engines, write for our Bulletin No. 28. We will be glad to send it to you.

OSEPH REID GAS ENGINE COMPANY
OIL CITY, PENNSYLVANIA, U. S. A.

BRANCHES AND AGENCIES—Marietta, Ohio; Logan, Ohio; Newark, Ohio; Ft. Recovery, Ohio; Shreveport, La.; Charleston, W. Va.; R. B. Moore, Bolivar, N. Y.; Bradford Supply Co., Robinson, Ill.; Frick & Lindsay Co., Bradford, Pa., and Kentucky Distributors; S. R. Shoup, 708 Pacific Electric Bldg., Los Angeles, Cal.; Frick-Reid Supply Company and Branches, Distributors for Oklahoma, Kansas, Texas, Arkansas and Wyoming.

BRANCH SHOP—TULSA, OKLAHOMA

MARKETER'S VIEW OF THE SITUATION; CONTRASTS OIL AND STEEL INDUSTRIES

By C. L. Maguire
President C. L. Maguire Petroleum Co., Chicago

History seems to be again repeating itself. For several years now we have had these unreasonable market advances and have scraped through the inevitable summer reaction. We will do it again and, being better prepared by experience, will come through better this time. Practice makes perfect. It's like the eel who, when asked how he liked being skinned, replied, "You can get used to anything."

Now having only a worm's eye view of the situation, my remarks are not to be taken too seriously, but I may be able to give you a little food for thought, which, added to your own, and properly digested, may set well or possibly may result in cramps.

My study of the bigger industries proves to my own satisfaction that the petroleum industry is the only one that operates with reverse English. Every other industry of which I have knowledge bases and controls its whole operation on its point of contact with the public.

The ultimate selling forces govern the course of procedure, and the public demand, as reflected through the selling forces, absolutely governs the factory operation, which in turn works back to the raw material.

Wildcatting for Ore?

As a specific example. Imagine the Steel Corp. and its big and worthy independent competitors engaging in a mad scramble for iron ore. Price no object; consumption no object. Dig the ore and get it above ground. Beat the other fellow to it. Add to this mad scramble a bunch of wildcat ore producers, digging in all likely and unlikely spots for more and unneeded ore, goaded on by ore prices that look good to them, and operating with the absolute assurance that if they struck pay ore, that there would be a mad scramble by the corporations to take the output and add it to their already excessive stocks.

Then look at all the blast furnaces, with many additional ones added in an attempt to work up this ore. The rolling mills as we have them today with a multitude more of them built or building, all furiously working 24 hours a day building up stocks of bars and rails and plate irrespective of demand. The steel people have warehouses and plants for their finished product scattered over the country. Enough I assume to handle their trade; however, the enormous output of all these theoretical blast furnaces and steel mills must be marketed. "Build more warehouses." "But we have all we need for our distribution to satisfy the public demand." "Never mind that. Build more, build them in every block." "But the demand is only so much, this multiplication of warehouses will not increase the sales, and will increase our overhead very materially." "Never mind that, by hook or by crook, we must market our surplus, and we can always raise our price to the public, if our distribution costs get too high."

Example of Steel

Right here I want to apologize to Judge Gary for even in theory representing his business leaders as being so apallingly brainless industrially. That big industry, under his able leadership, sells all it can wherever it can. Their mills stay a few weeks' operation behind sales orders and when sales slow up the mills slow up. The blast furnaces supply the mills with just enough pig iron to take care of their operating requirements, and the mines dig just enough ore to supply the going necessities of the blast furnaces. The remainder lies in the lap of Mother Nature until wanted. Nothing "hit or miss" in that industry. The diamond drill has told them where additional vast ore beds lie awaiting the ultimate demand. Supposing some wildcatter discovered an ore bed and began getting it out? Would there be a rush to buy that product by all the big fellows? There would not. The chances are that the producer would have his ore on his hands or an offer for it representing less than his labor costs of production. He could sell the whole property to someone for future development after the diamond drill disclosed the extent of the ore body and its quality, but you can bet your last dollar that that ore would not come out of the ground until its turn had come in answer to the insistent call of the old law of supply and demand.

I have used the steel industry in this instance. Any successfully operated industry would answer just as well. They all operate from the selling end back to raw material except ours, and you know the result.

Mid-Continent Minimum $3

Mid-Continent crude in the opinion of those that ought to know, should never bring less than $3 per bbl. at the well. This, I am told, represents development costs, plus upkeep, plus pumping, plus depletion, plus a small profit. Every barrel brought to the surface and sold at less than $3 represents industrial waste. The only way to prevent this industrial waste is to leave the oil in the ground. Develop and define fields and then leave them there awaiting the call of supply and demand. Several fields of known value held in reserve would stabilize the oil industry as nothing else would, just as the defined but undeveloped ore bodies stabilize steel prices.

The variations of the markets now and in the past few years have made us objects of public suspicion and we cannot expect as an industry any sympathetic public understanding, because, again as an industry, we don't deserve it. The well named industrial "Follies of 1923" should have taught a lesson. The press of financial necessity blinded some to the facts. They hoped, (I think against hope) that crude production was going to decline, so they allowed crude and the tank wagon markets to advance spectacularly early in 1924. No new producing areas were believed to be in sight and production was due for a rapid decline. Then one after another new field came in and the "Follies of 1924" held the stage.

No Fear of Shortage

It is a certainty, in my opinion, that the recent faltering in the steady upward trend of crude oil production will soon be overcome by new flush production. How could it be otherwise with unlimited and unrestricted drilling going on on all sides of us? And don't let anybody kid you about a crude shortage. It is estimated that producers are now getting out about 25 per cent of the available oil. That means that old abandoned fields still have, presumably, three times as much left in them as was taken from them. When necessity drives, our engineers will reclaim most of it. They have already given good thought to the problem. The oil shale people say there is enough petroleum in sight in shale beds to make the present production from wells look like a joke, and they are already operating in several places at costs that enable them to compete with well oil. We have coal enough in sight for 7,000 years. I think that is the figure some wise one worked out, and when they are digging the last yard of coal now in sight, some oil men will be scrambling for business at the same old stand.

Now to get back to 1925. Newer and better methods have about trebled the gasoline recovery from crude. Better refining practice has enabled the refiners, not only to keep up with the enormous demand of the internal combustion engine, but to stay ahead of it. The majority have now adopted some form of cracking. With an annual average increased demand of 15 per cent, the refiners have not only met that demand but have added 15 per cent to the stocks on hand. If all of our refiners reached a stage of efficiency equal to or approximating today's best

(Continued on Page 88B)

JOBBERS! NEED ANY OF THESE?

Improved Foot Valve

Handy Union Wrench Coupling

Patented Duplex Tank Vent

Swing Joint

Hand and Power Pumps and Pump Combinations

Self-Closing Tank Wagon Faucet

Combined Tank Wagon Cap and Vent

Lock Gate Valve

Put Stations in Shape for a RECORD Year

Consumption of Petroleum Products will again take a leap forward in 1925. The jobber who is "prepared" will get the lion's share of the advance.

"Preparedness" begins "at home," with the ordering and overhauling of the bulk station. Leaky valves should be replaced. Evaporation losses should be cut short with proper vents. Efficient pumps — modern tank wagon vents and faucets—all these details should be attended to.

Then you can forget petty annoyances and concentrate, when the busy season opens, on your "primary job"—getting the business which will make 1925 your RECORD year.

The world's largest manufacturer of oil handling equipment is ready to serve you.

"The Home of the Swing Joint"

A. Y. McDONALD MFG. CO.
DUBUQUE, IOWA
OMAHA MINNEAPOLIS DES MOINES

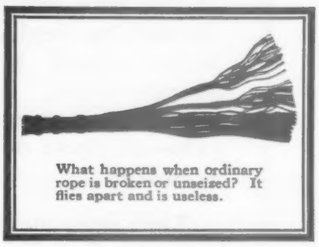
Complete stocks also carried by:
Butler Mfg. Co., Kansas City
Preferred Utilities Co., 33 W. 60th St., New York
U. S. Flexible Metallic Tubing Co., San Francisco, Seattle, Los Angeles

Est. 1866 McDonald

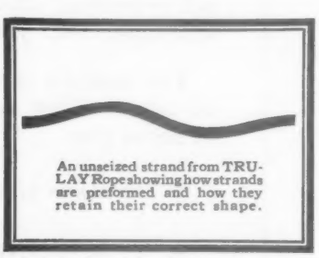
McDONALD

First – New Rope

It resists unstranding



What happens when ordinary rope is broken or unseized? It flies apart and is useless.



An unseized strand from TRU-LAY Rope showing how strands are preformed and how they retain their correct shape.

Each Wire – Each Strand Preformed!

TRU-LAY is—a distinctly different wire rope, made by a new principle which preforms each individual wire and strand to the exact shape it must assume in the finished rope. It is made in the usual sizes and lays.

TRU-LAY resists unstranding even though it be cut and handled without seizing. Wire can be unstranded and replaced, each falling naturally into its position in the rope structure.

TRU-LAY'S ADVANTAGES—Tests indicate longer life for this new rope under bending stresses. It has less constructional stretch and maintains its original diameter better than ordinary rope. Broken outer wires on used TRU-LAY keep their position instead of fraying out of the strand to cut sheave grooves or drum faces.

It is more easily spliced and handled than ordinary rope.

Load is evenly distributed on strands and the individual wire load is remarkably uniform. Socketing is easier and uniform loading near the socket is more certain. TRU-LAY has never shown any tendency in service to develop high strands. These are but a few of TRU-LAY'S general advantages. Write for the booklet describing TRU-LAY'S benefits in specific uses.

TRU-LAY IS USED: Though on the market but a short time TRU-LAY is rapidly gaining wide use where only the best can be used in wire rope—automobile brake cables, oil drilling cables, aeroplane controls, elevator cables, etc. Ask for booklet—"2 Basic Improvements in Wire Rope" and sample of TRU-LAY Rope. See address next page.

Distributed in Mid-Continent Oil District Stores in All Principal

TRU-LAY

Wire Rope

Now—New Fittings

100% Strength without zinc

Mechanically Applied Steel Fittings

At last, mechanically applied steel fittings for wire rope are an accomplished fact. By the TRU-LOC process, a steel sleeve is slipped over the unseized end of TRU-LAY Rope and a mechanical process *flows the metal down upon the rope for the entire length of the sleeve.* The result is shown in the photograph above. TRU-LOC Fittings develop 100% rope strength. They make the application of rope as simple and easy as that of rod or bar steel.

Any type of fitting may be applied: shackles, threaded sleeves for turnbuckles, eyes, etc. The sleeve end can have any shape for ease in application, square, hexagon or smooth, as shown at the right. For the first time, manufacturers of boats, hoisting machinery, elevators, aeroplanes, and other standard uses can order rope *complete with fittings ready for installation,* at only slight additional cost over the rope itself.

TRU-LOC Fittings, because of their use with TRU-LAY Rope, develop even loading on strands and wires—insure full working strength for the rope. The rope runs the full length of the sleeve—the TRU-LOC holds as long as the threads hold. *A broken sleeve from any cause does not release the rope.*

This Free Book— will be sent on request to wire rope users. It illustrates and tells the story of TRU-LAY Rope and TRU-LOC Fittings.

The fittings shown at the right are a few of those developed by the American Cable Company for automobile brake cables, yacht rigging, aeroplane controls, etc. The engineering department will be glad to work with you in developing special fittings for your uses. Write us.

A Steel TRU-LOC Fitting, split open to show how the metal grips strands and wires in the rope.

A hexagon TRU-LOC Fitting. Any fitting of this type is practicable, making wire rope as easily adapted as rods to various uses.

Shackles or yokes can be fitted directly to the rope as shown.

TRU-LAY Rope with a threaded hexagon TRU-LOC Fitting. Permits the application of shackle as shown, or turnbuckles, rods, etc.

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TRU-LOC *fittings*

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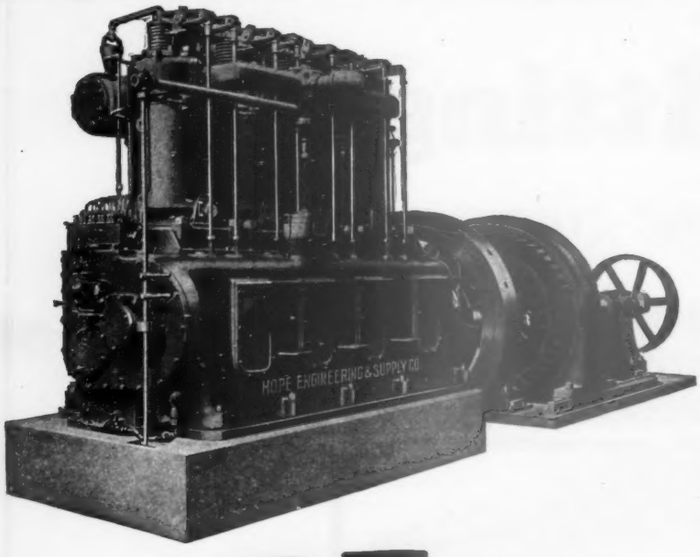

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The Power-Plus Engine

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You'll get an unmatched simplicity of design and ruggedness of construction. You'll get such engine refinement as only 20 years of engine building can produce. You'll get an over-all economy which cannot be surpassed by any form of prime mover. You'll get operating characteristics equal to the most exacting service demands.

If these features appeal to you, write us about your power requirements and let our engineers work with yours.

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HOPE
Engineering & Supply
COMPANY
DESIGNERS
MANUFACTURERS
MT. VERNON, OHIO, U. S. A.

FLUID DELIVERY FROM OIL AND GAS WELLS

(Continued from Page 54)

by experiment upon the mixture, or, if the vapor pressure for the temperature is known, the curve may be constructed from AB. Measure distances vertically upward from various points along AB, of length equal to Alpha, the value of the vapor pressure according to the scale of P. These points when connected will give the desired pressure volume curve CD for the mixture, an isothermal expansion curve with the axis X-X. In an experiment upon a mixture, the volume of the condensed vapor is sufficiently small in comparison with the space within the container so that no appreciable error will be realized by ignoring its effect in diminishing the space occupied by the remaining gaseous fluid.

190. The equation of the curve CD with respect to the X-X axis is:

$$(P\text{-}Alpha)\ V = K$$

The curve AB has merely been shifted upward through the distance Alpha. If we draw a second axis X'-X', parallel to X-X and at the distance Alpha upward from it, then the equation of CD with respect to the new axis is:

$$PV = K$$

Which is the same formula as for AB with respect to the axis X-X. The following conclusion may be stated:

"The isothermal expansion of a mixture of permanent gas with saturated

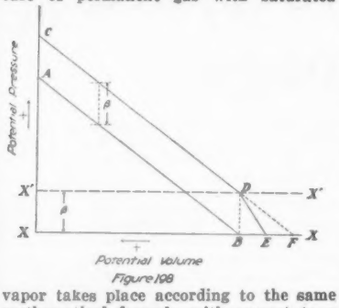


Figure 198

vapor takes place according to the same mathematical formula with respect to a new, definitely located axis as the formula of the permanent gas alone with respect to the original axis."

197. At some point D the volume may have become sufficiently great so that the condensed liquid is all evaporated. There are now lacking vapor molecules to occupy space not taken up by molecules of the permanent gas. The vapor is unsaturated, the isothermal curve breaks at D and takes the path of a rectangular hyperbola approaching the axis X-X. All gas is now behaving as a permanent gas. The value of K in the equation is altered; one period of time for the experiment has ended and another has begun at D. (Article 59).

Potential Phase

198. The preceding articles deal with absolute phase. Let us now consider delivery, which belongs to the potential phase. The curve AB, Figure 195, for the permanent gas alone, becomes, according to Article 126, the straight inclined line with the formula:

$$P - KV$$

as shown in Figure 198, with respect to an axis X-X, the position of which is located by the constant back pressure. (Article 128). But we have just observed that CD in absolute phase, with respect to a new axis X'-X', is the same curve as AB with respect to X-X in that phase. Then CD altered to potential phase, must be a straight line with respect to some axis parallel to that for the permanent gas alone. The equation for delivery of the mixture is then;

$$(P\text{-}B) = KV$$

where B is some distance yet unknown in value. With respect to a new axis X'-X' distance from X-X, this equation becomes;

$$P = KV$$

which is the same formula as AB possesses with respect to the axis X-X. CD in Figure 198 can be drawn parallel to AB at the vertical distance of B, as shown.

Decline in potential pressure starts at C and proceeds toward D. This point corresponds to D in Figure 195. The curve breaks here because the vapor now behaves as a permanent gas, being in unsaturated condition, and a new value of K changes its slope toward some point E.

199. The value of B depends upon alpha and upon the quantity of condensed vapor present within the reservoir to maintain saturation. With sufficient of the liquid, so that the vapor does not become unsaturated before reaching zero potential pressure, there is no point of breaking as D; the curve continues uninterrupted to the point F. In this case B is equal to alpha in value.

The curve shows an excess potential volume recoverable by virtue of the presence of the vapor equal to FB or EB, as the case may be. An increase in the constant back pressure raises the axis X-X and the point E approaches D. A quantity of condensed vapor insufficient to maintain saturation at a given constant back pressure may become sufficient upon increasing this pressure.

In practice it is not essential that we know either the value of Alpha or that of B. The important point desired to be brought out here is the fact that the laws of delivery are not upset by the presence of vapors. The straight line of Article 127, for the rigid tank, remains a straight line when vapors are present, although this line may become broken if the saturation point is passed. Even in this case, the broken parts are still straight in themselves.

200. There is an essential difference between a vapor and a very imperfect permanent gas which must be acknowledged in our analysis. Upon compression, the vapor breaks down completely, becomes a liquid, and is no longer measured as a gas in this condition. The imperfect gas, on the other hand, does not break down with the compression offered within the reservoir. Its molecules become "jammed" against one another and the forces existing between them, due to their masses, become proportionately great. (Article 157) The fluid remains as a gas and is consequently measured as such.

A glance at Figures 195 and 198 shows the areas under the curves, which represent energy, to be quite different for CD as measured from the X-X axis and from the X'-X'axis. Not only do they differ in amount but their mathematical variations differ. For example, in Figure 195, P times V is a constant quantity when measured from X'-X' but not so when measured from X-X. The presence of a vapor disturbs the curve which can be constructed with PV as ordinates and P or V as abscissas. Such a curve for a perfect gas is a straight horizontal line.

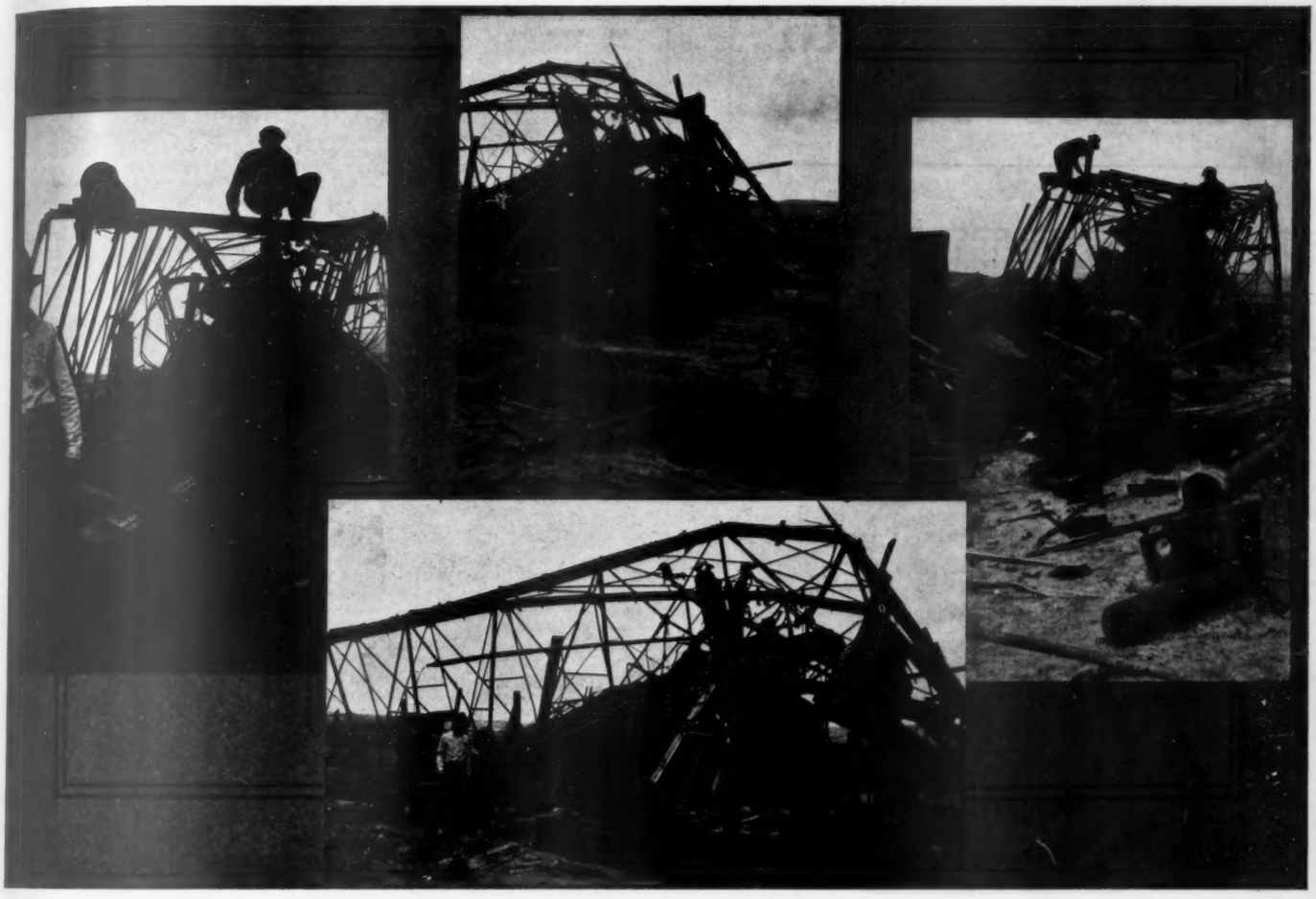
Laws of Thermodynamics

201. Thermodynamics, in the sense in which it is used by the physicist, is that branch of physical science which treats of the effects produced by heat and the phenomena accompanying their various manifestations. It permits the study of energy changes involved in a physical change of state, or in a chemical reaction without in any way requiring information regarding the molecular mechanism of the process under investigation. When the term is used by the engineer, however, thermodynamics is understood to mean that branch of engineering science which deals with the interconversion of heat and work, and the phenomena attendant thereon. In this sense the subject involves the expansion of confined gases and the performance of external work by such expansion.

Whereas the hydraulic engineer is particularly interested in the mechanics of liquids, the specialist on heat engines of all kinds is most interested in the mechanics of gases. The latter subject has therefore been largely developed in connection with the study of thermodynamics. The sphere of the petroleum engineer necessarily includes a knowledge of the mechanics of all fluids.

202. The physical differences between liquids and gases have already been noted. What are their mechanical differences? We do not find the mechanics of the two fluids, in many important instances, to be fundamentally distinct in character,

Proven Power, Strength and Durability



Lou Sontag was pulling casing with a No. 24 Leidecker Machine for the Mutual Oil Co. in the Salt Creek Field. Someone made a mistake in not estimating the power of the Leidecker Calf Wheel. As the pictures show the Steel derrick was pulled in—It cost $21.00 for parts to repair the Leidecker Machine.

So still we cannot say how much casing a Leidecker Machine will handle.

Leidecker Drilling Machines With Independent Calf Wheel

will handle all the casing your derrick or mast can stand

An Important New Feature

Leidecker No. 24 Drilling Machine can be had with our new I-Beam Crane to facilitate the assembling or removal of any part of the machine, when necessary to reduce weight of the machine in moving over bad roads. This removes the last objection to the admitted superiority in every other way of a STEEL CONSTRUCTED MOUNTED MACHINE over a non-mounted machine, as it is possible with this device to take the machine apart or to assemble the machine in less than half the time required for any other machine of the same size.

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but rather merely different in the matter of degree for the same characters. Several propositions which we know by experience to hold for liquids, we also know by experience that they hold for gases; for example,

(a) Torricelli's Theorem (Article 152)
(b) Bernoulli's Theorem (Article 153).
(c) Time required to empty a vessel, (Article 154).
(d) Energy-pressure-volume relation (Article 155).

These propositions, whether applied to liquids or gases, are expressions in potential phase. (Article 156) Thermodynamics have been largely confined to absolute phase on account of the fact that

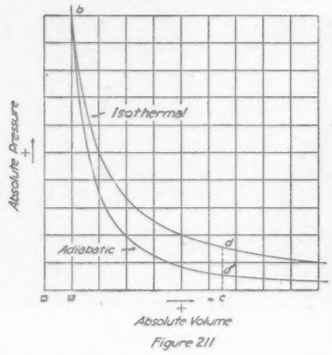

Figure 211

the "reservoir" of interest is of the type illustrated in Figure 116, the cylinder with a piston, wherein there is a constant free volume undergoing a variation in compressed volume. (Article 125) Our problem concerns reservoirs of types which are distinct from this one and among such are those as illustrated in Figure 115, the rigid tank, wherein the compressed volume is constant and the free volume changes. (Article 126)

Getting Proper Equation

203. We may take advantage of the extensive amount of work done by students of thermodynamics by accepting their equations between pressure and volume in absolute phase and transferring them to potential phase either by experimentation or by processes of reasoning similar to that used in Article 126. However, when several problems have been thus worked out, a peculiar mathematical fact will be noted; to-wit, that a simple methematical operation will, in all cases, produce the proper equation in the potential phase if carried out consistently. This operation may be stated in the following rule: In any equation between pressure and volume in absolute phase, of the form;

$$PVn=K$$

where n is any exponent occuring in thermodynamics, pick up either of the two terms on the left hand side of the equation and place it upon the other side, thus;

$$P=KVn$$

understanding that the equation holds provided that the units of P and V are now in potential phase and that K is not the same constant in both equations. The inverse operation may also be performed, obtaining the first equation from the second.

Thus, the equation for Boyle's Law, Article 123,

$$PV=K$$

where the exponent n is unity, becomes immediately,

$$P=KV$$

Likewise, in the same article, the equation

$$P'+14.7)\ V=K$$

by the same rule becomes,

$$(P'+14.7)=KV$$

In Article 196, the equation,

$$(P—Alpha)V=K$$

is converted into the equation of Article 198,

$$(P—B)=KV$$

where B may or may not be equal to Alpha.

Based upon Two Laws

204. The subject of thermodynamics is based upon two laws which have been determined solely from experience. The first law is a statement of the conservation of energy; to-wit,

"If or whenever heat is converted into work of any kind, or work into heat, there is always a definite quantitative relationship between the heat which has disappeared as such and the work which has been done, or vica versa."

The second law is known as the law of the dissipation or degradation of energy. It is stated as follows:

"It is impossible for a self-acting machine working in a cycle, unaided by any external agency, to convey heat from a body at a low temperature to one at a higher temperature; or heat cannot of itself pass from a cold to a less cold body."

The present stage of development of the science of physical chemistry and likewise that of the modern heat engine of all types is due very largely to the efficacy of the two laws in furnishing a mathematical basis for necessary calculations.

205. A well producing oil, water or gas, singly or in combination, is a machine. It may therefore be treated as one mathematically.

Such a well, when drilled in, disturbs a state of equilibrium and a process which delivers fluid to us immediately begins, having for its purpose the establishment of another state of equilibrium. (Article 5) Each individual potential reservoir (Article 38 and 59) possesses only one such process. To this particular process we may apply the technical term "sweep." The sweep may be completed or not. It is frequently interrupted and replaced by another sweep when conditions under which production takes place are altered in any manner, either by manipulation of the orifice or by a change in constant back pressure.

We may say, then, that the well is a machine having either a single sweep or a series of segments of sweeps, each sweep segement corresponding to a particular period of time during production from the well.

206. If reservoirs were to be classified according to the principles of thermodynamics there would be two divisions into which all would fall, irrespective of the nature of the fluid or fluids which they produce. These divisions are:

(a) The closed type reservoirs.
(b) The open type reservoirs.

Examples of Types

The former are not open to the atmosphere unless at the orifice in case production takes place against atmospheric pressures only. The latter are always open to the atmosphere at some point other than the orifice. Simple illustrations of both classes are;

Closed type
(a) Gas holder
(b) Rigid gas tank
(c) Jamin capillary tube open type
(d) Gravity solution tank.

It will be observed that this classification does not conform to the one based upon the laws of delivery. (Articles 77, 79 and 83) Hydraulic control and volumetric control reservoirs may be either of the open or closed type. Capillary control reservoirs are necessarily of the closed type. In these the reservoirs are necessarily of the closed type. In the radius of action of the pressure P, a distance which we have designated as B, (Article 175.)

207. Open type reservoirs are primarily for liquids only, although gasses may present in solution, or, upon release of pressure in the approach toward the orifice, this gas may have passed into the free state and collected in "pockets." This is frequently the case with air in water supply mains for cities, the entire system being a reservoir of the open type.

Closed type reservoirs contain gases alone or gases with liquids. Oxygen and hydrogen tanks are examples of the first case and the soda-siphon bottle is a good example of the second. Auxiliary water systems where the water is raised by air compression in the auxiliary tank may be cited as an example of the second case, also.

Containers holding liquids only are not regarded as reservoirs in the mathematical sense. To locate or equip such a container so that it will give up its liquid

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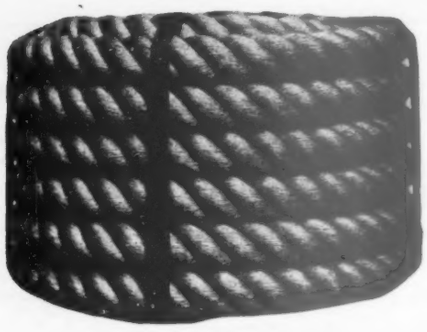

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constitutes a conversion into a reservoir of the description discussed in the two preceding paragraphs.

Heat and Potential Volume

208. Potential volume is essentially "mass." On account of the expansion resulting from a raise in temperature and the contraction from a decrease in temperature, potential volume must be expressed in amounts "as of a standard temperature." The mass is of a given volume of fluid is not altered by change in temperature.

Heat does not affect the amount of potential volume for reservoirs of hydraulic control because the volume to be delivered is infinite in any case.

Heat does not affect the amount of potential volume for reservoirs of volumetric control of the open type. The space which such fluid occupies may be altered by changes in temperature but the mass delivered is unaffected and this, when calculated on the basis of the standard temperature, reduces to a fixed number for expressing volume.

Heat materially affects the amount of potential volume for reservoirs of volumetric control of the closed type. The

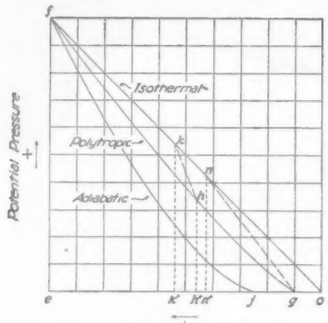

Figure 212

energy possessed by the confined gas is increased with a raise in temperature. It is capable of delivering more fluid by the time equilibrium is again established in the system.

Heat affects the amount of potential volume for all reservoirs of capillary control. The pressure P is increased and therefore the radius of R is increased. (The Jamin effect is also decreased by raise in temperature, increasing R).

The principles of thermodynamics apply only to the closed type reservoirs of the finite controls. (Article 91) All open type reservoirs are acting independently of these principles (Article 162).

The source of energy expelling fluid from the closed type reservoir is solely gas in the state of compression. Herein enters the influence of heat affecting pressure at a definite volume. (Article 132) Condensed vapors, although possessing liquid form, are thermodynamically equivalent to fluids of gaseous form. The "definite volume," either as potential or absolute volume within the reservoir, is not constant; it declines under the conditions of delivery for the finite controls. (Article 100) Herein enter the principles of thermodynamics.

External Work

209. The reservoir was arbitrarily divided at the orifice into the internal and external systems. (Articles 63 and 64) The internal system as a unit then performs "external work" upon fluid under pressure at the orifice. Since there must always be a pressure existing against production (only a perfect vacuum reduces the constant back pressure to zero), there must always be a certain amount of external work performed by the internal system in any practical case of delivery from a reservoir. The performance of this external work reduces the amount of energy residing with the reservoir by its equivalent amount (work and energy are convertible, each into the other, and may be expressed in the same units.)

We have observed the conditions under which the fluid arrives at the orifice. (Article 161) The material within the reservoirs acts as a long porous plug, extending from the original position for each particle of fluid to the orifice. Expansion is taking place within this plug and is completed, so far as the internal system concerned, at the orifice itself. Our division of the reservoir into the two systems corresponds exactly to Joule's act when he modified his experiment by placing the two receivers in separate vessels of water. (Article 158) The "internal" receiver lost energy in an amount exactly equal to that gained by the "external" receiver.

Have we any means of measuring the amount of energy lost by the internal system in the course of production? Yes, we can measure the work performed in the external system. But if we only take into consideration the PV factor, which is "mechanical energy," and neglect the U factor, which is represented in the form of heat, our calculations will be in error, particularly if the latter factor is proportionately great.

In our problems with oil and gas reservoirs we may confine calculations in general to the consideration of the PV factor by virture of the following hypotheses;

(a) With oil and gas reservoirs the value of U is small compared with PV.

(b) In a given reservoir with its physical state practically constant (fluid, porous medium, orifice, etc.) we may consider PV and U to bear an approximately constant ratio between them, so that we may regard

$$\frac{P_1V_1}{P_2V_2} = \frac{E_1}{E_2}$$

where E is the amount of potential energy remaining within the reservoir at any instant during potential life. (Article 32 and 37)

(c) Final equilibrium within the reservoir is established on the basis of isothermal conditions; a topic now being discussed.

Isothermal Expansion

210. The experiment of Article 123 was performed under the conditions of constant temperature. Any external work performed by the confined gas upon the piston caused a fall in temperature and any gain in U at the expense of PV on account of the Joule-Thompson effect likewise caused a decrease in temperature, but these losses in mechanical energy were supposedly compensated by the addition of heat to the reservoir. Figure 123 represents an isothermal expansion curve; it is the rectangular hyperbola, as stated before, with the formula;

$$PV = K$$

Had the experiment been performed at various constant temperatures, a series of such curves would have been obtained wherein the constant K would take on a series of values. If the gas experimented upon were perfect, there would be a decrease in temperature if external work is performed by it and heat would necessarily be added in order to maintain isothemal conditions as in the case of the permanent gas.

In the conditions specified for the ideal well (Article 94) we may imagine, if we like, that the formations adjoining the reservoir are perfect conductors of heat. In this case, the ideal well represents isothermal gas expansion because losses in heat are readily compensated by the flow of heat from these adjoining formations. The gas would then expand in accordance with the isothermal curve in absolute phase, delivering fluid in potential phase as in Figure 127.

Adiabatic Expansion

211. If we would prefer to consider the ideal well as having adjoining formations which are perfect non-conductors of heat, the expansion of the gas cannot take place isothermally. The temperature must fall, registering the amount of heat lost by the reservoir as the equivalent of the work performed upon the fluid external to the orifice, and also registering that due to the Joule-Thompson effect. Such expansion is termed "adiabatic expansion." The curve between P and V is no longer a rectangular hyperbola, but it possesses the formula;

$$PV^y = K$$

where y has a value greater than unity and generally less than one and one-

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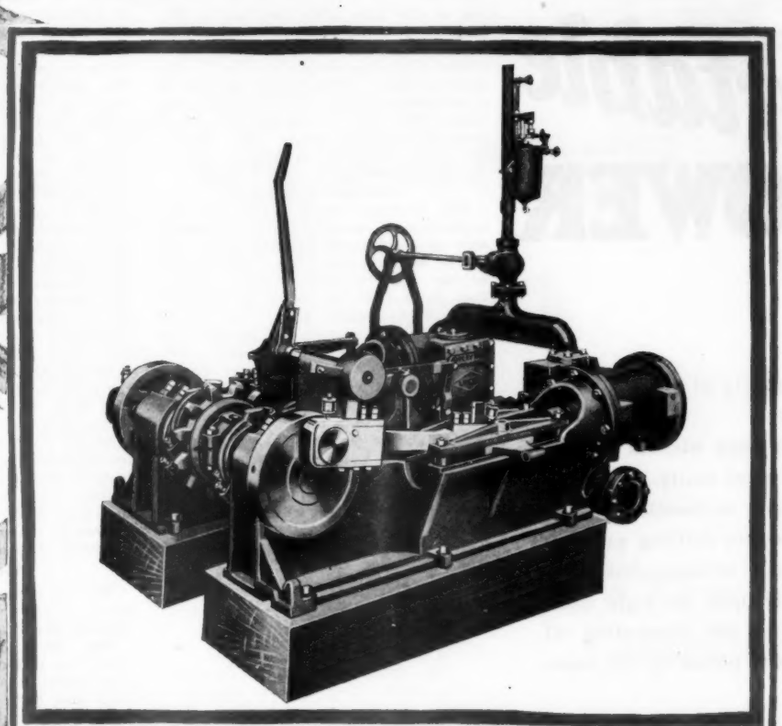

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half, as determined by experiment and calculation upon many of the common gases. The exponent differs for each gas and, although considered mathematically as a constant for many calculations, it is in reality a slightly varying quantity for different temperatures. The isothermal and adiabatic curves are illustrated in Figure 211 for comparison. The value of y is taken as 1.5 in order to present extreme differences in the curves.

212. What is the curve for adiabatic expansion in the potential phase? We may write its formula directly, according to the rule given in Article 203. Thus;

$$P=KV^y$$

where y has the same value as for the absolute phase. This is the formula of a curve belonging to the family of parabolas. The vertex lies at the point where potential pressure equals zero. Such a curve is illustrated in Figure 212 by the line fj with the exponent again 1.5.

Polytropic Expansion

213. In regard to the question of heat conduction, it seems reasonable to assume that the adjoining formations in the case of the actual oil and gas reservoir are neither perfect nonconductors. Some heat flows into the reservoir formation as production takes place. The actual expansion curve must lie between the isothermal and adiabatic curves. How close it may lie to the isothermal depends upon the nature of the gas, the heat-conductivity of the formations and the rate of production from the reservoir.

214. The exponent in the equation between P and V will have some value n between y and unity. The general expansion term "polytropic" may be used to describe the process with the formulas;

$$PV^n=K \text{ and } P=KV^n$$

These are the formulas of Article 203. The curve for the latter equation is

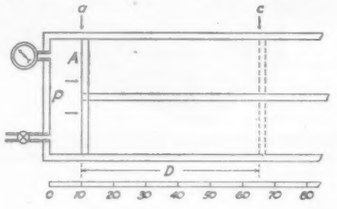

Figure 216

shown in Figure 212 in the line fg. The exponent is arbitrarily given the value of 1.2. As the exponent is given values more nearly approaching unity, the curve becomes more nearly straight.

Final Equilibrium

215. Given a sufficient length of time, the temperature of an underground reservoir, at complete, final equilibrium will be equal to the original temperature. This final equilibrium cannot be established until the temperature is back at normal because heat will continue to flow into the reservoir formation as long as it is cooler than the formations adjoining.

The potential volume recovered from the reservoir by the time complete equilibrium is established is the same as would have been obtained had expansion been isothermal. The course of the PV curve differs for polytropic expansion and, as we shall see presently, it is a broken line unless production is allowed to take place continuously at its own normal rate of decline.

Energy-Pressure-Volume

216. Figure 216 illustrates again the cylinder with a piston. The area of this piston is A, and it is in the position at A as shown. With open valve, introduce an amount of gas up to P pounds per square inch pressure and close the valve. Now allow the gas to expand, moving the piston through the distance D to the position at c. The gas has done external work upon the piston.

If P is the pressure per unit of area, and the area is A, the total force exerted upon the piston is PA. Work, by definition, is equal to force multiplied by distance, therefore,

$$W=FD$$

but $F=PA$

then $W=DPA$

The increase in volume realized by the gas in expanding is equal to DA; i.e.

$$V=DA$$

and substituting this in the preceding equation;

$$W=PV$$

That is to say, the work performed by the gas is equal to the pressure multiplied by the increase in volume. The energy which was expended is equal to the amount of work performed, or

$$E=PV$$

The pressure P did not remain constant; it took on a continuous series of declining values. Referring to Figure 211, let us suppose that the pressure in the present experiment began with a value represented by the ordinate ab. The compressed volume was, at that time, oa. If expansion took place isothermally, then the pressure decline had the path bd as the volume increased from a to c. It will be necessary to know the value of the pressure at every instant during expansion if it is desired to use the above equations for E and W. This would be quite impracticable were it not possible to apply the principles of integral calculus. These principles show us an important feature; namely, that the area under the expansion curve, abdc, represents the amount of work performed. Each unit of area under the curve is a unit of work or energy.

217. If the expansion took place isothermally heat must have passed through the walls of the cylinder in order to compensate for the work performed. Suppose the walls were perfect nonconductors of heat, then expansion would have been adiabatic. The path of the pressure decline would have been some curve bd' in Figure 211 and the amount of work performed in such case would be represented by the area abd'c.

Absolute Phase

The experiment with the cylinder is one in absolute phase; the quantities E and W, like P and V, are in this phase.

218. With the cylinder of Figure 216 place the piston in a fixed position at some point c, and with open valve, fill with gas to a pressure P. We now have the equivalent of a rigid tank. It contains a certain potential volume which will be produced when allowed to do so from the valve. The difference between the pressures on the two sides of the orifice is the potential pressure. As before,

$$W=PV$$

where W is work in potential phase when P and V are so expressed.

Pressure and volume decline in accordance with Figure 212. If the expansion is isothermal, the decline between pressure and volume is represented by the line fo and the total amount of potential work performed by the reservoir is represented by the area efo.

For adiabatic expansion the decline takes place according to some curve as fj. Potential volume is less in this case; an amount je instead of oe. Less potential work is performed by the reservoir; an amount represented by the area efj.

If, while production takes place, some heat enters the system through the walls of the reservoir, expansion is polytropic. Decline follows some path as shown by the curse fg. External work is being performed at a rate which is more rapid than the inflow of heat. Some point g is approached, indicating a potential volume of ge as long as production is continued without manipulation of the orifice.

Supposing that the orifice may be closed when the point h has been reached, heat continues to enter the system until the original temperature is reestablished. The point indicating the pressure-volume relations will move from h to k, the latter being located on the isothermal line. The relation of the two points is such that the area efo minus the area efhh' equals the area k'ko.

Similarly, when the orifice is closed at the point g, the pressure-volume relations are finally set up at the point n. The area efo minus the area efg equals the area n'no.

The orifice may have been closed and the reservoir abandoned as "exhausted."

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Return at a later date for observations will disclose the fact that the reservoir has "replenished" itself. It has replenished itself; with heat, and not with fluid. With the closed type reservoir the walls are impenetrable by fluids, either liquids or gases.

219. The area under the potential PV curve are units of potential work or potential energy. We may write the equation for potential energy thus;

$$E=PV$$

This equation requires P to be expressed in pounds per square foot and V in cubic feet in order that E may be in foot-pounds of energy. It is not always convenient to use these units but we may rewrite the equation so that the quantities may be expressed in any units (Articles 16 and 20) thus;

$$E=KPV$$

where K is some constant, the value of which depends only upon the units employed.

Potential Phase Heat

220. Problems on reservoirs concerning heat may be reduced to comparatively simple mathematics when treated in what we have termed, "the potential phase." It would appear that many other classes of problems on heat in the science of physics can likewise be simplified by this method.

The next installment is devoted to the subject of "Field Data, Computations and Extraneous Factors."

SINCLAIR CONCESSION DEAD, SAYS RUSSIAN

Gregory Pyatkoff, chairman of the concessions committee of the Soviet Government, considers the Sinclair oil concessions in Saghalien virtually dead. He says the agreement was not abrogated by the Russo-Japanese treaty, but by the Sinclair company failing to carry out the terms within a specified time.

Pyatkoff says that in 1924 he gave the company six months to comply. Evidently referring to the failure of the Sinclair company to induce the American Government to recognize Russia, Pyatkoff says:

"The Soviet Government is convinced that the Sinclair company is unable to carry out certain obligation enumerated in the contract because it overestimated its own weight and importance in political matters and has not resulted in any support from its own Government."

R. H. Soper, representative of the Sinclair interests in Persia, who came to Moscow in an effort to revive the concession, said the company had not failed to observe the agreement but was prevented because of the unforeseen presence of Japanese troops on the island. His company intended to press its claims, as it had a right to do under the terms of the agreement and select for development oil area outside that granted the Japanese in the recent treaty.

NEW ORLEANS FIGURES ON GAS FROM MONROE

NEW ORLEANS, Feb. 28.—The report on whether it is feasible to pipe natural gas to New Orleans from the Monroe fields probably will be made public some time in March.

J. L. Porter, director of the water purification plant, has returned from the California fields. He was delegated by the gas committee of the sewerage and water board, to investigate gas fields throughout the country, with a view to producing it at lower cost. On his last trip, Mr. Porter visited Central and Western Texas, Kansas, Western Missouri and California. Mr. Porter said excessive endurance tests show no city can afford to tie up to a single field or pipe line. Pipe lines often break in severe cold weather and at critical times, he declares. He believes an artificial gas plant should be maintained to take care of inadequacy of the pipe lines or possible depletion of the natural gas field.

Texas Gasoline Tax Increase Is Returned To Senate Committee

AUSTIN, Tex., Feb. 28.—The gasoline tax raise and its companion measure proposing to lower motor vehicle fees apparently dead as a result of action in the Senate State Affairs Committee, which voted to report these measures unfavorably have been sent back to the committee which will hold hearings.

The committee had thought the present tax of 1 cent a gallon on gasoline and the present auto registration fee should be given a further trial before being subjected to change.

A few months ago, ex-Governor Ferguson, presided at a meeting in Dallas which went on record as approving a 3-cent gas tax and a lower auto fee and when Governor Miriam Ferguson assumed office her first message to the Legislature urged passage of such measures. The Dale-Donnell bill proposed a tax of 2½ cents per gallon, which its proponents figured would produce about $12,000,000 for the various Texas school funds, while the automobile license fund was to be kept in counties for improvement of the highway system. The new measure would have decreased the auto license fee to an average of $6 a car.

Under the present law the Highway Commission would continue to receive three-fourths of the auto tax, the other fourth going to the schools, amounting to a total of $8,000,000 a year. The present 1-cent gas tax produces a little less than $4,000,000 annually, three-fourths of it going to the Highway Commission and one-fourth to the schools.

Ferguson declared the automobile license tax is far too heavy for the average man and he was insistent the gas tax would be easier on the public, besides compelling out-of-State tourists to pay their share. Industries using gasoline registered much objection, as also did independent refineries, declaring they and not the public, would be forced to stand the tax burden. In fact, some of the independents declared the tax might put them out of business.

Early in the session sentiment favored passage of the increased gasoline tax as indicated by the report of the House committee that was favorable by a good majority.

Members of the Senate State Affairs Committee said the Texas County Judges' Association had registered a vigorous protest against both the gas tax and the lower auto fee. The committee was furnished figures showing that the Highway Commission would really receive more than $2,000,000 less under the gas tax than under the present law and that the counties would not have as much, because of the great reduction in the license fees paid for large cars.

NEW FRENCH TRACTORS

Tractors and military trucks, utilising heavy oil, gasoline, charcoal and vegetable oils were exhibited at the Agricultural Exposition held at Buc near Versailles, France, under the auspices of the Ministry of Agriculture and the War Department. For some years the French automobile company, Renault, has been constructing heavy oil engines for tractors in addition to some moderate powered marine-type Diesel engines. Tractors of their design have passed the test required by the Ministry of War for the hauling of guns of all kinds of soils. Because of this fact the Ministry of War has decided to offer a premium of 7,100 francs to all companies and individuals purchasing a Renault oil-engined tractor. This measure has encouraged many farmers to purchase these tractors for agricultural work. Generally speaking, the Renault tractors are designed to burn gasoline but are convertible to burn heavy oils. This company also constructs tractors operating on charcoal.

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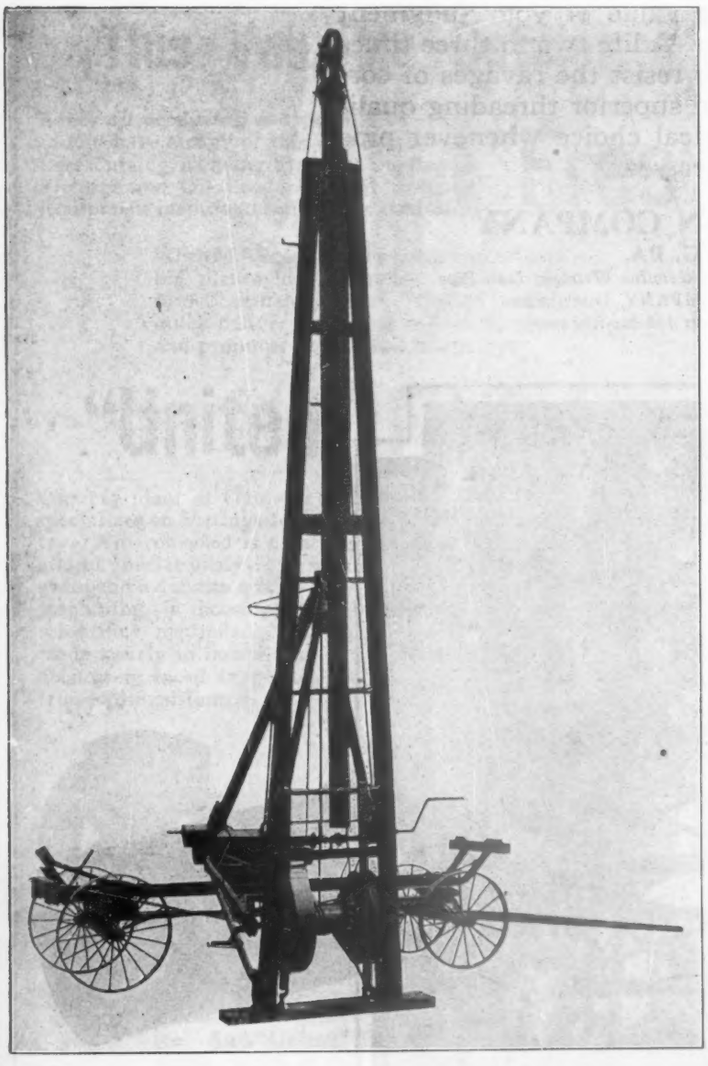

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LAHEE TELLS OF CONDITIONS IN FIELDS IN MEXIA FAULT ZONE

Frederic H. Lahee, Ph. D., of Dallas, Tex., in a paper on "The Comparative Study of Well Logs on the Mexia Type of Structure," demonstrates the similarity of the oil producing structures in the Mexia fault zone.

The Mexia oil field in Limestone County, Texas, is closely associated with a fault that trends about 30 degrees east of north and has a displacement of between 200 and 400 feet, with a downthrow on the west. The fault has been traced in its characteristic features southward to near Kosse, 15 miles south of Groesbeck in southern Limestone County, and northward at least as far as the Trinity River at the eastern border of Navarro County, and possible as far north as Hunt and Hopkins Counties. Along this fault zone lie the Mexia, Wortham, Currie, old Richland or Seay-Cranfill, new Richland and Powell Fields, which have been very much in the public eye in the past three years, and the Kosse and Bazette areas where tests are being drilled in an endeavor to open pools similar to those already developed.

Doctor Lahee in describing the Mexia Field, which was the first to have been opened and developed, gives in a general way the characteristics of the other pools. It was not discovered that a fault existed in the Mexia area until several wells had been drilled. Then it gradually became evident that the oil in the Woodbine sand there owed its accumulation not so much to a simple anticline as to a major fault with an attendant drag. In some parts of the field this fault has a relatively low westward dip amounting to 35 or 36 degrees in the formations above the Austin chalk, but increasing to 50 degrees or more from the top of the Austin chalk downward. The relationship between accumulation and faulting at Mexia has been clearly established by subsequent development. The largest producing wells were not far from the line where the pay sand is cut by the fault. In many instances the western offset to a big well was found to be dry if it happened to be drilled across this line. Eastward the average flush production of the wells diminished to the eastern margin of the pool. These characteristics in a general way serve to describe the conditions in Wortham and Powell, with some variation in the angle of the faulting.

Peculiar Structure

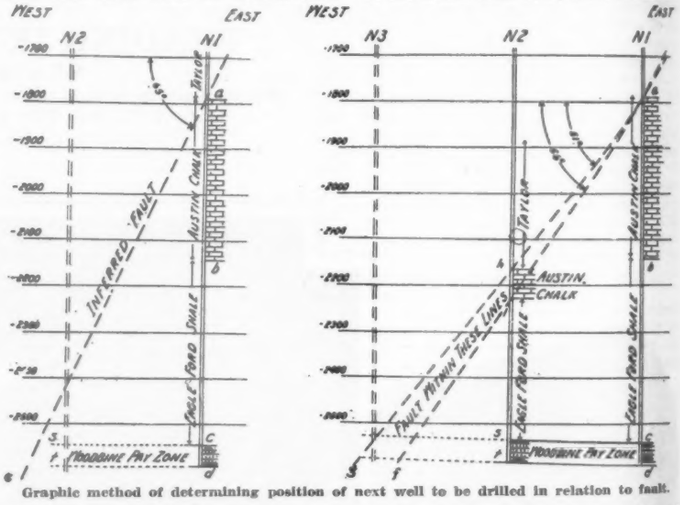
Doctor Lahee says that in reviewing the general characteristics of the fields along the Mexia fault one is impressed by the peculiar yet definite structural conditions that attend the petroleum reservoirs and also by the close resemblance of these conditions in all the pools within the Mexia zone. Although before the Mexia Field was developed the Mexia type of structure—a strike fault with upthrow on the side toward the regional dip of the strata—was regarded by geologists as possibly favorable to oil accumulation, its great economic importance in the Mid-Continent region was not fully appreciated until the last three years. During these three years much time and money has been spent in seeking similar faults, but outside the Mexia zone the only fields recently developed that seem to be associated with the same kind of displacement are the Luling Field of Caldwell and Guadalupe Counties, Texas, and the chain of pools in the Mirando district of Webb County, in the same State. It is characteristic of the pools of the Mexia type that they are relatively long and narrow. This is because the oil has accumulated along and close to the fault. The dimensions of the pools referred to are given by Doctor Lahee as follows:

Name of pool—	Length along Fault, Miles	Maximum width
Mexia	7	1¼ mi.
Currie	2	2,800 ft.
Powell	7½	4,000 ft.
Luling	7½	4,000 ft.
Mirando group, at least	25	5,000 ft.

The old and the new Richland Fields and the Wortham Field were omitted because their limits had not been sufficiently defined when the paper was prepared.

Major Faults

In spite of the large displacement of the major faults that have controlled the accumulation of oil and gas in the pools of the Mexia fault zone, these faults are seldom clearly exposed at the surface of the ground, Doctor Lahee continues. At Mexia the displacement is indicated along part of its extent by the rather abrupt westward termination of outcrops of the Midway limestone along a fairly straight line; by the steep westward dips of this limestone along its western edge, and by occasional indications of slickensiding. North of the Mexia Field another fault may be readily located near Tehuacana Creek. In a few scattered outcrops northward in the zone steep or irregular dips suggest faulting. With these few exceptions, however, the actual position of the surface trace of each of these big faults is very obscure.



Graphic method of determining position of next well to be drilled in relation to fault.

As already stated, the main controlling fault in each of the fields in the Mexia fault zone strikes from 20 to 30 degrees east of north, nearly parallel to the regional strike of the beds. They dip usually at angles between 45 and 65 degrees toward the west and have the downthrow on the side up the regional dip of the strata. They therefore are accompanied by drag downward toward the west in the eastern or upthrown block. In every instance the oil has accumulated against the fault in the upthrown block.

The accompanying diagram (Figure 1) shows the general conditions attending

(Continued on Page 130)

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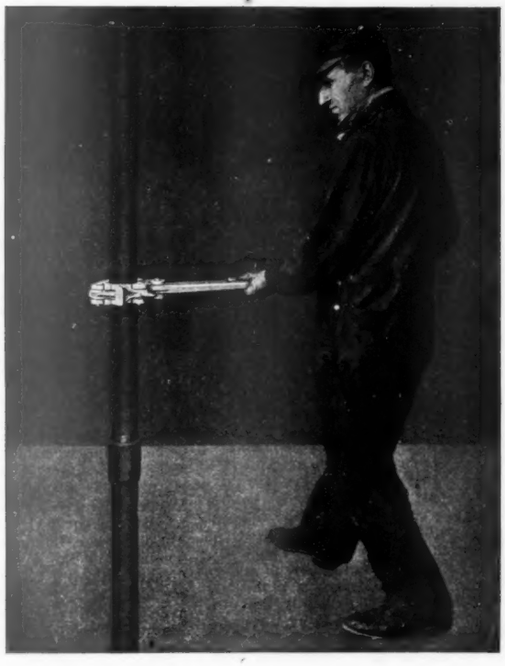

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Tide Water offers to Jobbers, Wholesalers, and Marketers

One hundred and fifty petroleum products of unsurpassed quality, refined to exact specifications—*plus* specialized service.

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Number Ten of a Series

Ready to Serve

NEVER before has the word Service meant so much to mankind, particularly to those who purchase the world's goods.

Service, from the producer's standpoint, implies "following through" from the beginning to the very end, whether the commodity offered for sale is legal advice or a bar of soap or a 250 ton locomotive.

True service must always be founded on the inherent quality of the product plus expert advice as to its correct application to industry.

Quality is built into Tide Water Products because of the surpassing excellence of the raw material employed and the wide knowledge gained through nearly a half century of refining experience.

And it is because of this we say we are ready to serve.

Three Points of Interest to Every Buyer of Petroleum Products

Quality

For nearly half a century Tide Water has held steadfast to the fundamental policy of complete, thorough refining to exact specifications. This is one of the reasons for the world wide demand for our pure Pennsylvania Cylinder Stocks, recognized throughout the entire industry for their true worth.

Refining

Intensive experimental and research work is always under way to improve our refining methods. As a result we are constantly raising our standards of quality even when our existing standards are, in many cases, far in advance of the rest of the industry. All refining operations are controlled by a single, highly trained technical organization.

Service

Tide Water's specialized service to jobbers, wholesalers and marketers of petroleum products goes hand in hand with the absolute uniformity and unsurpassed quality of Tide Water Products. Specialized service means a keen interest in your marketing problems and helpful cooperation by our Sales and Refinery organizations at all times.

TIDE WATER OIL COMPANY

WHOLESALE DEPARTMENT

11 Broadway **New York**

MARKETER'S VIEW OF THE SITUATION

(Continued from Page 70)

refinery practice, we would have a possible gasoline supply from the present crude production of just about one and one-half times our present 1925 estimated domestic requirements plus exports.

Jobber "Sitting Pretty"

Of all the branches of the industry, I think our end is sitting prettiest. Here we are in the midst of a stormy upward trend of wholesale and retail prices. Prices, however, that are absolutely justified by the law of supply and demand, and it finds our jobbers, like good ships, with sails close reefed, riding the waves calmly and courageously with the assured knowledge that they will ride out the storm, provided— and that provided, men, is a big one. Economize! Watch your costs and be sure you know them. Allow plenty for depreciation and allow it on your books monthly so that it will be continuously before you. In the olden days a team of horses could be worked several years then sold for nearly their cost. Tank wagons lasted a long time. Now a truck has to be depreciated from 25 per cent to 33⅓ per cent a year and our experience has been that pump equipment averages about four years as its life. A proper set of books setting up by months these reverses is the only way of getting a true picture of costs. I think most of our price cutting troubles come from a failure to appreciate true costs. Any jobber who doesn't set up his depreciation costs by month, kids himself on his output costs. When it comes time to scrap those trucks and buy new ones, he will wonder where his profits went.

Secret rebating is another silly diversion. The fellow that has the business usually gets the break and holds the business if he wants to meet some silly rebate. The result is that everybody retains approximately the same proportionate gallonage with a rebate canker eating into his profits. Cut it out! Don't believe everything you hear. Lots of salesmen are so sold on themselves that they think business should naturally flow to them, and only price cutting by the competitor prevents. Price cutting is the weapon of inferiority. Think that over and the next time you cut a price, tell yourself the honest truth and say, "I am doing this because my competitor is a better business man, a better salesman than I am. I have to take this underhand method to average up to him. I have to add the rebate to my ability to break even with him." Just say that over and over to yourself every time you slip and maybe some day you won't slip and will find yourself a real salesman.

Just keep your feet on the ground, live and let live, and keep right with your public.

Gasoline Taxation

Regarding a tax on gasoline. I often wonder why during great deflations taxes are seldom, if ever, reduced. Our law makers seem to know all about passing tax measures, but they hardly ever abolish one. A tax once placed, sticks, and after the public gets used to it, they assume it as a matter of course. Everything deflated after the war but taxes. Federal taxes have dropped a very little but State and municipal taxes have increased. The war tax necessity having passed, why isn't there a great surplus of tax revenues? Where are they being spent and to what benefit? I think the people of Minnesota should investigate that question before adding to their tax burden. Naturally, I am against this tax. I don't see why our industry should be singled out to act as tax collector any more than the coal man or the gas man or the ice man. But I don't think we will get anywhere fighting this tax from an industrial standpoint. We must educate our public so that they will bring pressure to bear on the law makers. If the people want that tax they will get it. It is up to you to prove to your individual public that the law is wrong.

Defeat this law through your public. If you cannot do that, then see that you get a law that is not unduly burdensome on the industry. A clause that a user must file his refund bill with the State within 30 days and accompany it with receipted bills, has its advantages. Get that in by all means. Also, if a jobber has to pay on the basis of tank car gallonage, see that a proper and fair allowance is made for evaporation losses.

EASTERN FIELDS

(Continued from Page 52B)

have the road completed to a location on the Tierney farm. In Sheridan district, Calhoun County, Snider Brothers are building a rig on the A. Blankenship farm.

In McElroy district, Tyler County, the Hope Construction & Refining Co. is building the rig for a second test on the S. A. Merritt farm. In Grant district, Ritchie County, the Aetna Oil & Gas Co. moved in a drilling machine and rigged up to drill a test on the Ross estate. On Hughes River, Murphy district, the Hope Natural Gas Co. is drilling tests on the John Rymer and J. R. Westfall farms.

On Rock Camp Creek, DeKalb district, Gilmer County, the McCall Oil & Gas Co. completed in the Blue Monday sand No. 3 on the Miller heirs' farm good for from 3 to 5 bbls. a day. Three miles south of Harrisville on Indian Creek, Murphy district, Ritchie County, Sigafoos Brothers and others completed a test on the Sigafoos heirs' farm. It is a gasser good for 250,000 feet in the Squaw sand.

In Murphy district, Ritchie County, the Hope Natural Gas Co. completed in the Maxon sand a test on the Harley Snodgrass farm. It is a small gas well.

Southwest Pennsylvania

On Shannon's run, Perry Township, Greene County, the C. M. Fox Oil & Gas Co. has a gasser in the Big Injun sand good for 750,000 feet a day on the Oliver Wade farm. On the same stream and in the same township, the Carnegie Natural Gas Co.'s test on the Alice C. Henderson farm is good for 260,000 feet. At Baden, Beaver County, Black Brothers & Co. have a light pumper in the 100-foot sand at No. 4 on the B. F. Hiscke farm. In the old Duff City Field, Schuck & Co.'s No. 3 on the A. Sickles farm is a fair gasser in the same formation. In Green Township, Beaver County, H. L. Stuttler & Co. have a 5-bbl. pumper at a test on the Joseph Dicapio farm. In Perry Township, Greene County, the Peoples Natural Gas Co. has a fifth sand duster at a test on the W. L. Minor farm. In Whiteley Township, the Equitable Gas Co.'s test on the S. Lemley farm is a gasser in the fifth sand. In Richhill Township, Teagarden & Co. have a gasser in the Big Injun sand at a test on the J. P. McKerrihan farm.

CENTRAL WEST

(Continued from Page 52D)

Logan Gas Co. has tubed and shut in its No. 1 on the F. Trescg farm in 710.

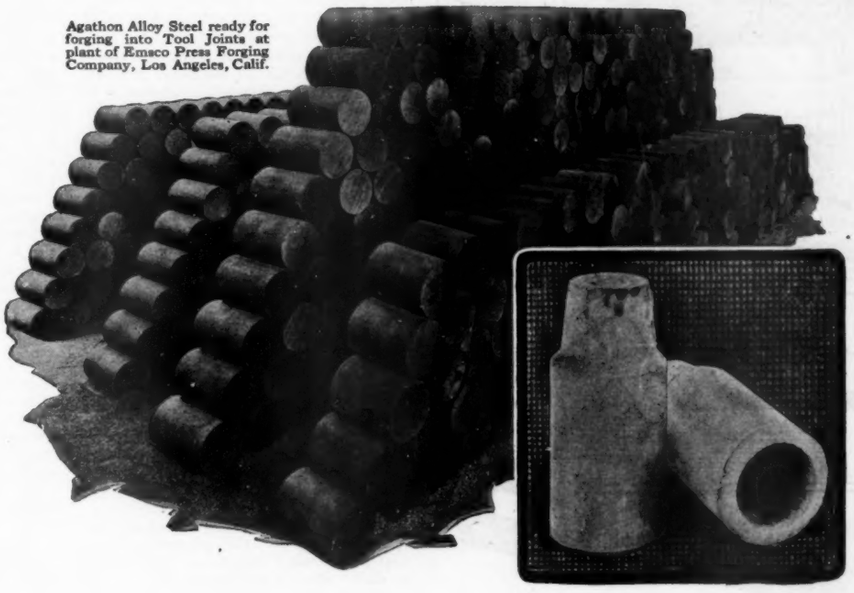
McBride and others have completed, tubed and shut in No. 1 Watkins, in Fractional Section 2, Carthage Township, Athens County. This was a very nice gas well Waldron and others failed to find additional gas at a lower depth and plugged them off to save the gas from the more shallow sands on the Kate Evans farm, Section 3.

The Pennsylvania Contracting Co. got a fairly good showing of gas in No. 1 Joseph Wible farm, Fractional Section 744 Fairfield Township, Washington County, but talks of drilling for deeper known sands.

STATE HAS PRIOR LIEN

AUSTIN, Tex., Feb. 28.—The State of Texas has a lien on oil leases for collection of its gross production tax, and upon the property of a company for the gasoline sales tax, Attorney General Dan Moody ruled Saturday in an opinion to S. H. Terrell, comptroller.

These liens constitute a prior claim by the State in a State receivership case, paramount to all other claims, under constitutional authority, the opinion held. The ruling was written by Ernest May, assistant attorney general, and approved in a departmental conference.



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And For Tool Joints, Too

A FEW years ago Agathon Alloy Steels were little known in the oil-drilling industry. Finally these tough, super-steels were adopted for drill bits. Their highly successful performance in this service has resulted in their general adoption for Tool Joints, Jars and other parts of oil-drilling equipment subjected to great wear, stress or strain. If you are not acquainted with Agathon Alloy Steels, send for our interesting booklet. If you have a steel problem, our metallurgists will help you solve it free of charge. Write us.

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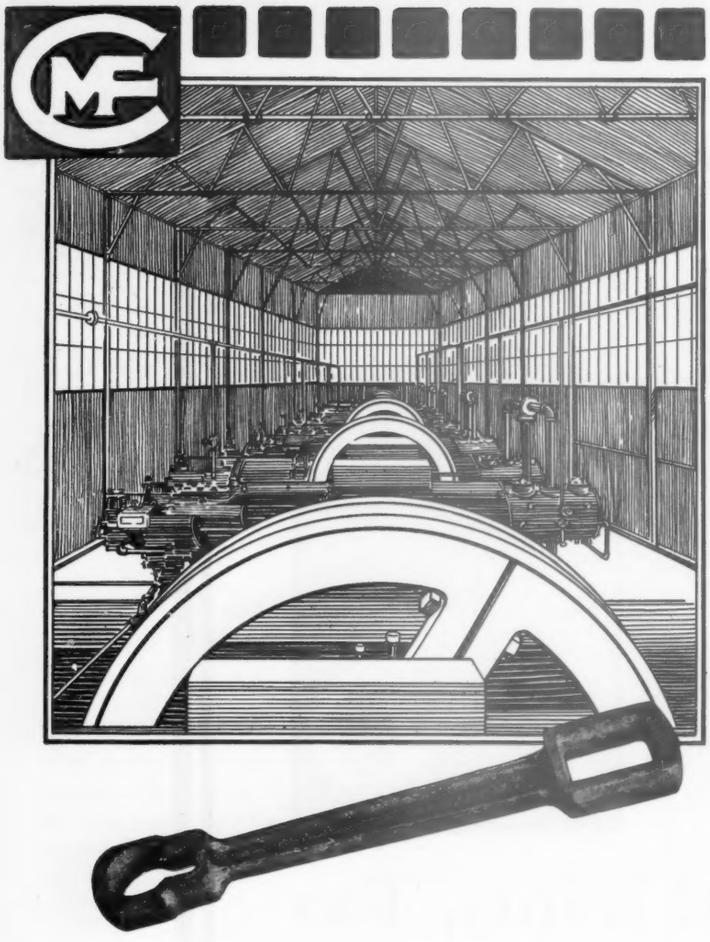
AGATHON ALLOY STEELS



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CHAMPION DROP FORGINGS

INDICATIONS POINT TO FUEL OIL AS NEXT AGE IN PETROLEUM CYCLE

By N. O. Fanning

NEW YORK, Mar. 2.—That the next age in oil will be that of fuel oil is now generally understood. The tendency to use heavier oils in larger proportion is a natural leaning toward economy on the part of world industry. The result is that engines to burn oils of heavier gravity are being perfected, and the big development in this direction will be that of the perfection of a fuel oil-burning engine to run automobiles.

As world industry is working toward economy, so is the oil industry, in working to meet the demands of industry in general, working toward greater simplicity in manufacturing and distributing.

As present there is rather sharp division between gasoline used for internal combustion engines, kerosene for use in lamps, gas oil for use in manufacturing gas, Diesel oil for use in Diesel engines and heavy fuel oil for use in furnaces in manufacturing plants and in large sea-going vessels. The tendency is to do away with these sharp distinctions and supply oils ranging in gravity from 15 to 35 Baume, for the same purposes now requiring finished oils ranging from 15 to 65 Baume.

Before this can be done to any great extent, however, an engine for running automobiles using what is now classed as fuel oil will have to be perfected. This is the work of many engineers or inventors at present, and the time is not far off when the work will bear fruit.

The development of the use of such an engine to replace the present gasoline burning internal combustion engine will be slow. Such a revolution cannot occur overnight. Too rapid a change would result in considerable waste and injury. Gradually, however, the change will take place, and in 15 years, perhaps, gasoline may be practically out of use except for special purposes requiring small consumption.

Age of Fuel Oil

The production of gasoline, roughly, in the United States, amounts to about 8,000,000,000 gallons annually, while that of gas and fuel oil amounts to 12,000,000,000 gallons annually. If heavy oil could be used in automobile engines, the demand for fuel oil from existing gasoline and fuel oil burning engines would amount to about 20,000,000,000 gallons annually.

However, the future promises a much larger use of oil through the increase in number of automobiles and number of industrial plants with furnaces using oil. In addition, there are other channels in which the use of oil can be developed where coal is now used. For instance, some oil men can foresee the period when all railroad engines will burn oil.

The tendency toward fuel oil is already distinctly noticeable. Furnace oil, used in furnaces for heating apartments, is one example of this tendency. The development of the Diesel engine is another.

It is altogether possible that kerosene will pass out as an important product of crude oil, as electricity becomes cheaper and is introduced more generally into remote countries.

With gasoline and kerosene practically eliminated the oil industry will then be called upon to supply mainly fuel oil and lubricating oil. together with the usual host of minor by-products.

Although the time when fuel oil will overshadow all other petroleum products so far as quantitative demand is concerned is perhaps far off, the tendency in that direction is so well advanced that the industry can now save itself many "growing pains" by gradually preparing itself for the change.

Probable Effect of Change

The matter of prices probably is closest to the oil industry and to the public in interest, if not in importance. The first thing to consider, however, in anticipating any change such as that suggested, is its effect upon the production of the raw material. It is quite evident that the consumption of oil as a whole will keep on increasing, especially if engines are developed burning lower grade oils which are cheaper. In other words, the lower the price, relatively speaking, the bigger the consumption.

It will be of little avail to develop engines to burn heavier oil if that oil is to cost as much as gasoline. The only assurance, then, of the development of such engines seems to be the maintenance of the comparatively lower prices now asked for fuel oil. Furthermore, in many of its uses, fuel oil will have to compete with coal, and to do so it cannot command a price higher than coal other things being equal.

All indications, therefore, are that the average return to the oil industry per gallon from fuel oil will be smaller than the average return from gasoline, kerosene and fuel oil, combined is at present. The importance of this statement is emphasized by the recent advances in gasoline prices.

Price of Crude

Every oil man of experience knows that low prices for crude petroleum bring a let-up in drilling, and subsequently, smaller production. Therefore, it might be contended that the oil business cannot continue if the return per gallon decreases. To go further, the question might be asked, how the industry is to supply larger quantities of oil when prices are relatively low.

The answer is that the following will probably happen: Higher prices for crude will prevail at the same time that the average return per gallon from finished products are obtained. This will be made possible by more economic and large scale producing operations on the one hand, and elimination of expensive and wasteful refining methods on the other.

The theory that crude oil can be produced more economically than at present is based on the development of large concessions abroad, each concession being developed by a single organization which can control production over an area of 500,000 to several million acres. This will eliminate competitive and wasteful drilling, and enable companies controlling production to bring to the surface only so much oil as is currently needed. Expensive storing of oil above ground will be reduced considerably.

So far as the manufacturing is concerned, it is easy to see where expenses can be reduced when it is no longer necessary to install special equipment for the refining of gasoline. The extent to which refining will be affected by the trend toward fuel oil will depend, also, of course, on the quality of the crude oils available. It seems that nature is helping the tendency to use heavier oils along by yielding constantly a greater percentage of low gravity crudes.

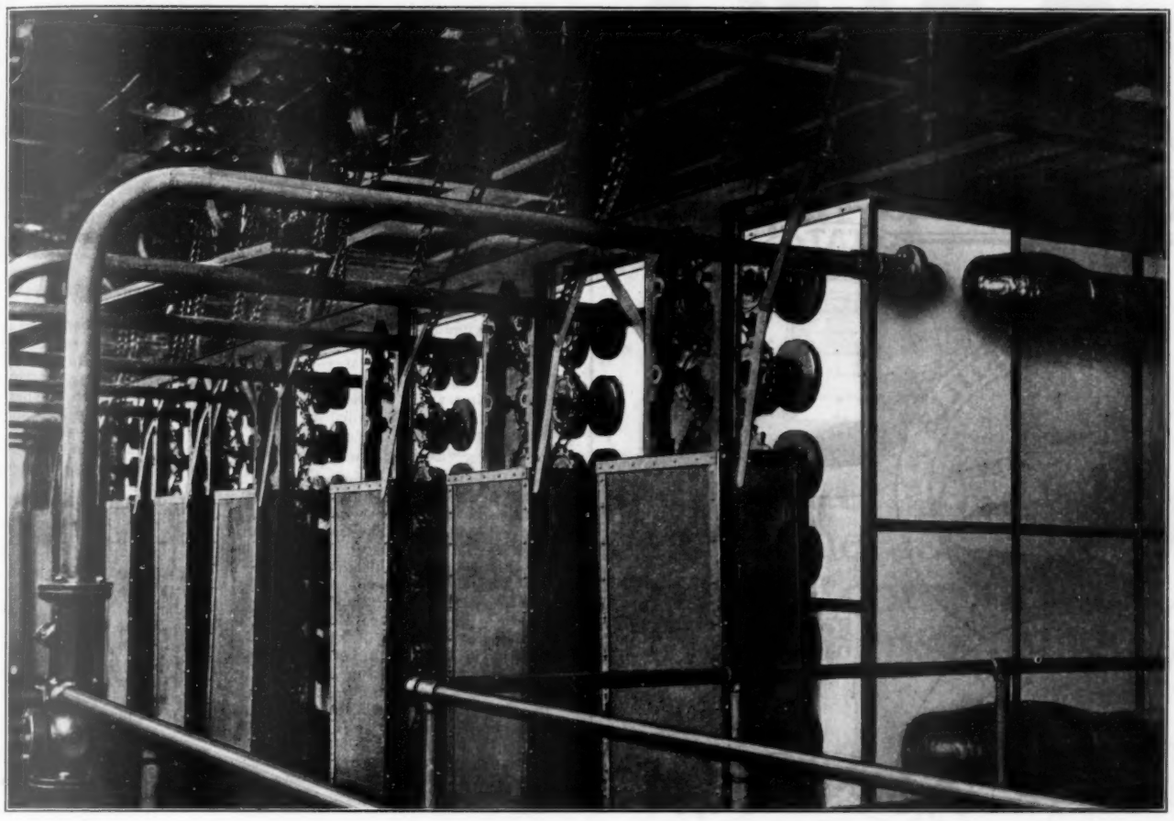
Gasoline Price Increases

Recent increases in gasoline prices are believed by many to represent a strong force toward the trend in the use of heavier oils. In the first place, consumers become dissatisfied when prices advance, and this is taken advantage of by politicians, both Federal and State.

On the other hand, higher prices are expected to result ultimately in increased output, which will sooner or later cheapen the price of oil once more. This will encourage consumption of oil, especially fuel oil, which must compete with coal.

The result, then, is a double force in favor of the elimination of gasoline and substitution of fuel oil, which is held in check only by the mechanical obstacles connected with using the latter.

Oil men who study these future possibilities and apply their present policies to them see a solution of many of the problems which have been troubling the industry during the past few years.



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Hence the big fuel savings made possible by special Johns-Manville Insulations for cold settling tanks, chillers, cold piping and brine cooler equipment. Long experience with such oil industry problems has thoroughly equipped us to apply the most efficient and durable insulating materials so that they yield the highest efficiency and greatest permanence.

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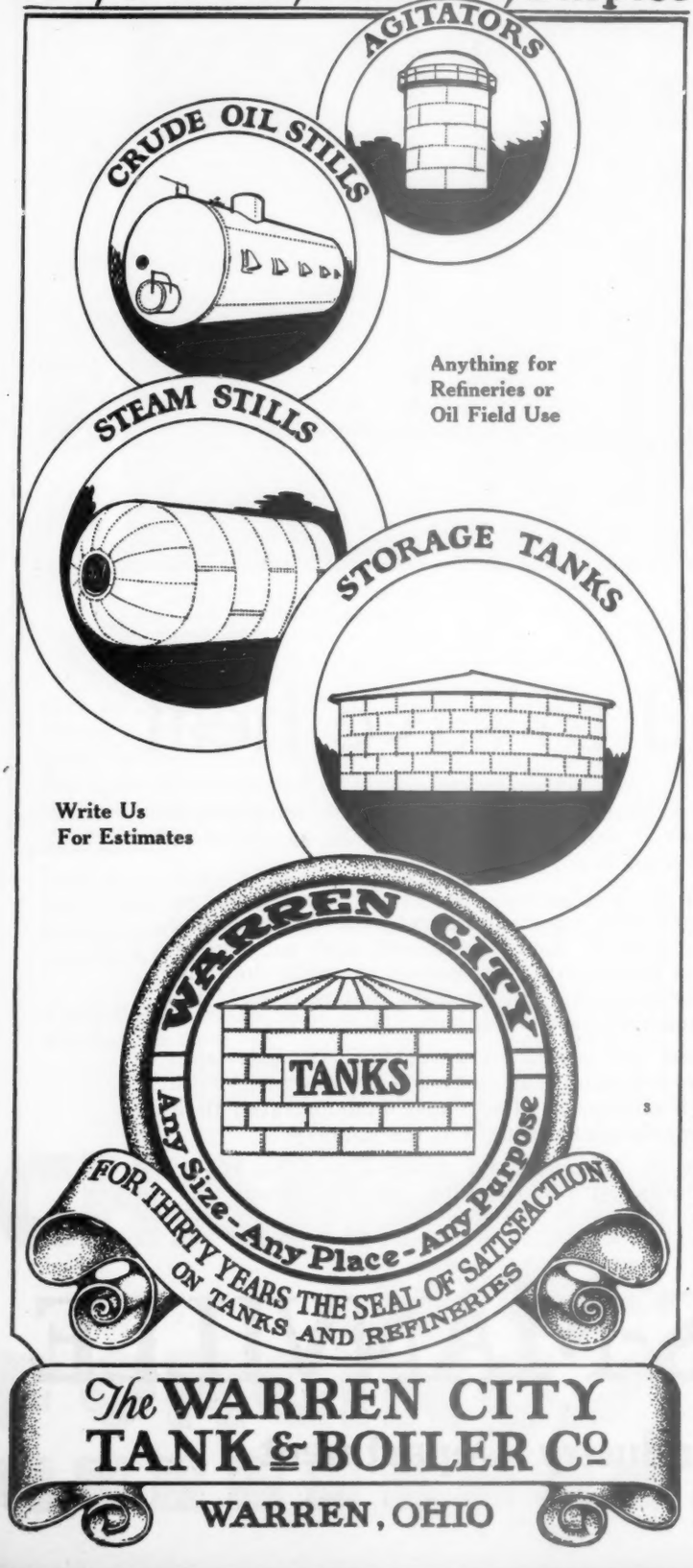
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The WARREN CITY TANK & BOILER Co

WARREN, OHIO

KENTUCKY-TENNESSEE

(Continued from Page 50)

Hall Baker Pool: Consolidated Gas Co.'s Nos. 4, 5 and 6, Hall Baker, drilling at 220, 205 and 67 feet, respectively; No. 1 Turner, across road from Pointer, drilling at 12 feet; Wood Oil Co.'s No. 4 John Church, and No. 4 Will Church, spudding; Harrington & Norris' No. 3 Evans, cleaning out; Smith & Sons' No. 1 Webb, shut down at 450 feet; Jackson and others' No. 1 Rich, drilling at 212 feet; Reese and others' No. 2 Dodder, drilling in the shale.

Gorby Pool: T. L. Gorby's No. 1 Bybee, shut down; L. J. Emery, Jr., & Sons No. 4 Deep and Greer, pumping amber oil from the shallow sand; Porter and others' No. 2 McLaughlin, pumping from shallow sand; Allison and others' No. 2 Hatfield, spudding in; Hammerley and others' No. 1 John A. Dodd is a location.

At Lucas, Stafford & Maxey's No. 2 Ritter Brothers is shut down at 450 feet; Lewis J. Emery, Jr., & Son's No. 1 C. A. Bellamy, at Bon Ayr, drilling at 200 feet below the shale.

Warren-Allen Counties

Very little work was accomplished with the drill in either Warren or Allen Counties the past week due to road conditions. However, eight new holes were started, five in Warren and three in Allen.

In the Gainesville district, north of Scottsville, the Gainesville Oil Syndicate's No. 2 W. E. Oliver was dry and plugged at 490 feet. Lee Moore's No. 4 Lee Moore is drilling at 106 feet; M. W. Graham's No. 2 Straight is a location; McCandless and others' No. 12 Carver is a rig.

In the Frost area, near Rodemer, Thompson and Meredith got a disappointment in their No. 1 at 500 feet; This test was drilled out of the regular bounds of the original Frost area and does not condemn any territory thought to be good by geologists and operators. The following wells are drilling in this district and further to the southwest: Guy & Co.'s No. 1 Costello; unknown parties No. 2 Hinton; Neeley, Lamp & Co.'s No. 3 Clack; Bastrus & Works No. 5 and 6 Lyle; Hive and others' No. 1 Kennedy; Andrus & Millet's No. 2 J. R. Goodrum, drilling below the shale; R. A. McLean's No. 10 J. W. Frost, drilling at 329 feet; No. 1 E. Britt, drilling at 255 feet; White Plains Oil & Gas Co.'s No. 8 J. R. Hornbuckle, drilling on top of the sand; Victor DeCaigney's No. 11 A. W. Duke, drilling at 96 feet.

In the Keen Pool, the Rathburn Oil Co.'s No. 4 Rathburn made 4 bbls. on jack at 450 feet. In the Mt. Aerial district, the Ruby Consolidated Development Co.'s No. 10 F. Dyson pumped 10 bbls. at 527 feet, 97 feet below the shale. No. 11 is spudding.

In the Rockfield area of Warren County the J. C. S. Oil Corp. got a duster in its No. 1 on the Allen farm at 513 feet. In the Richpond area, the Illinois-Kentucky Oil Syndicate's No. 6 Vance showed for 3 bbls. at 492 feet.

Drilling Wells in Warren County

Rockfield area: Ruby Consolidated Development Co.'s No. 6 Price-Hall is a rig; Amfot Oil Corp.'s Nos. 8 and 9 Shanks, shut down in the sand; No. 10 drilling at 867 feet; P. H. Lavelle's No. 7 W. R. Hunton, rigging up; H. Z. Clark, trustee, is down 852 feet and drilling on No. 5 Gillespie; Gillespie Oil Corp.'s No. 10 Gillespie, drilling at 976 feet; Cunningham and Henry's No. 8 Bryant, progressing at 634 feet; Lucille Oil Syndicate's No. 6 Morehead, drilling at 200 feet; H. J. Dobson's No. 5 George Rigglewood, shut down at 450 feet.

Richpond District: Roy Hogan's No. 3 C. L. Dillard, drilling at 320 feet; Clider Brothers No. 1 Berry-Robinson, rigging up; Rockfield Oil Co.'s No. 4 Kimbro shut down; Bolling & Lowman's No. 1 Stanley, spudding; Illinois-Kentucky Oil Syndicate's No. 1 Vernon Andrews, spudding.

Davenport Pool: George McGinley's No. 5 Wilson, drilling at 450 feet; T. A. Sheridan's Nos. 5, 7 and 8, G. Davenport, drilling at unknown depths; Wood Oil Co.'s No. 7 Oliver Grimes, cleaning out; Cadet Oil & Gas Co.'s No. 22 Biddle, drilling in; Onsel-Harnahan Oil Co.'s No. 4 Ora S. Davenport, rig; M. B. Williams No. 5 Hobson heirs, spudding; M. A. Rosanky's No. 4 Ora S. Davenport, spudding; Evans and others' No. 1 Montague, spudding. In the eastern part of Warren County, the New Domain's No. 5 Hewitt is showing for a light pumper and No. 14 on the Bronson farm was drilling at 342 feet.

Owensboro District

In the Herbert Schoolhouse section of the Owensboro Field the Panther Creek Oil Co.'s No. 12 R. M. Miller, south of No. 11, is pumping 10 bbls. from both the Jett and Barlow sands at 490 and 740 feet, respectively. In the same vicinity, C. A. Leeper is reported to have drilled in No. 1 F. V. Miller north of Milligan, at 732 feet, where it made 3 bbls.

Cumberland County

According to reports the M. E. Coop well of W. S. Raydure is holding up at 10 bbls. per hour at 320 feet below the Pencil Cave. It started off making 75 bbls. per hour on February 6. This well is in the north extension of the Sulphur Creek Pool. Jennings Brothers are drilling No. 3 Coop as an offset to No. 2 of Raydure's.

M. L. Gartlan's No. 3 Maude Blythe has finished setting casing and is now drilling. Unknown parties are rigging up to drill No. 1 Hiram Wells, near the Blythe farm at Kettle Creek.

At Goose Creek, the Cumberland Oil Syndicate's No. 1 C. V. Williams is shut down below the second Sunnybrook sand awaiting orders. At Bear Creek, the Judio Co., Inc., have moved a string of tools to the Bow farm on Rocky Branch anticline and will commence drilling within a few days.

DOUBLING WORKING EFFICIENCY OF OIL

(Continued from Page 56)

the action of sunlight and air upon some lubricating oils, the behavior of high boiling mineral oils on heating in the air, an investigation of the laws of plastic flow, standard substances for the calibration of viscosimeters, a standardized method for the determination of solidification points especially of naphthalene and paraffin. Some technical papers relate to the effect of added fatty and other oils upon carbonization of mineral lubricating oils, evaporation test for mineral lubricating and transformer oils, data on oxidation of automobile cylinder oils, density and thermal expansion of American petroleum oils, resistance of an oil to emulsification, determination of absolute viscosity by short tube viscosimeters, standardization of the Saybolt Universal viscosimeter, viscosity of gasoline, constant temperature still head for light oil fractionation, the Saybolt viscosity of blends, slushing oils, sulphur in petroleum oils, cutting fluids, the Redwood viscosimeter, reclamation of used petroleum lubricating oils.

In order to make most effective the work of the Bureau of Standards, the Bureau of Mines and Geological Survey, in the working out of scientific problems increasing the efficiency of every barrel of petroleum, there is need for a conference of the leading scientific minds of the country engaged in petroleum work for the purpose of determining the scope of research that should be pursued for this purpose. There have been discussions of this subject in various scientific bodies considering various branches of the work. However, there has never been a national conference of men qualified to pass upon the various classes of research which should be begun and pursued in a comprehensive way. This is one of the subjects that may interest President Coolidge's Oil Conservation Board. Questionnaires to be sent by the Technical Committee to technical men in the industry will call forth many views upon desirable methods of conservation among which doubtless will be conservation through scientific investigation. These questions are now being formulated and it will not be long before they will be in the hands of technical men working on producing properties and in refineries.

Cooperation

The production of Sharp Stock by the refiner permits material operating economies. The use of Sharp Stock by the compounder curtails the expense of blending.

The quality of Sharp Stock makes its sale a source of satisfaction to the marketer.

The Sharp Stock idea promotes cooperation of each branch of the industry---the one with the other.

The pour point of both Sharp Stock and Sharples-made Bright Stock is from 25° F down

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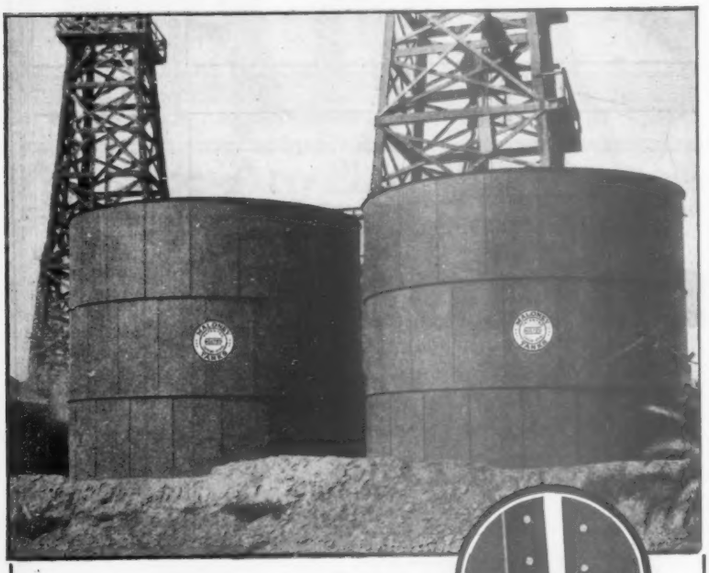

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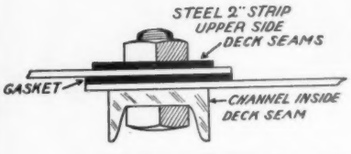

Keystone Copper Steel (having more than *double* the rust-resisting qualities of ordinary types of steel) is used throughout on all Maloney Tanks.
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MALONEY ALONE

MEXICAN FIELDS

(Continued from Page 50)

lime at 1,460 feet; No. 150 fishing tools at 1,475 feet; No. 151 cemented 8-inch in the San Felipe at 1,200 feet; Nos. 152 and 153 are in gray lime at 1,655 and 1,844 feet respectively; No. 154 in gray lime at 495 feet; Nos. 155 and 156 each cemented 8-inch at 1,200 feet in the San Felipe respectively; No. 157 is in gray shale at 160 feet; No. 158 cemented 8-inch in the San Felipe at 1,201 feet; No. 159 is in gray shale at 285 feet; No. 161 is rigging; No. 162 cemented 8-inch in the San Felipe at 1,287 feet, and in Lot 3, No. 118 is in gray lime at 1,645 feet. Mexican Sinclair Petroleum Corp.'s No. 85, Lot 2, is in gray lime at 1,800 feet; No. 104 in blue shale at 900 feet; No. 110, Lot 1, cemented 10-inch at 1,225 feet in the San Felipe, and No. 112 is in the same formation at 1,175 feet. Mexican Atlas Petroleum Corp.'s No. 14, Lot 1, is in shale at 800 feet. Mexican Gulf Oil Co.'s No. 71, Lot 1 Cacalilao, cemented 8-inch in the San Felipe at 1,204 feet.

Transcontinental Petroleum Co.'s operations in Lot 4 follow: No. 113 is in shale at 500 feet; No. 131 is in the San Felipe at 1,490 feet; No. 138 is running 8-inch at 1,285 feet in the San Felipe; No. 140 is in shale at 650 feet; No. 152 is in the San Felipe at 1,575 feet, and in Lot 5, No. 165 is spudding; No. 161 is in the San Felipe at 1,495 feet. In the Pacienica, just north of Cacalilao, Transcontinental's No. 10 is in limestone at 1,835 feet, and Nos. 11 and 16 are in the same formation at 1,615 and 1,560 feet respectively. New England Fuel Oil Co.'s No. 4, Lot 3, is in gray shale at 1,110 feet, and No. 6, same, is in the same formation at 1,190 feet.

Old Panuco

In the older sectors of the Panuco Field drilling operations follow: Credito Petrolero, No. 7, Lot 13 Lomas y Llanos is in the San Felipe at 2,140 feet, and No. 4, Lot 15 there is sidetracking at 2,264 feet. La Corona Petroleum Co.'s Nos. 94 and 95 are drilling in gray shale at 1,110 and 800 feet respectively. East Coast Oil Co.'s No. 446 Ingnio is cementing 8-inch in gray shale at 1,238 feet. English Oil Co.'s No. 10 Rufino is in hard gray shale at 1,120 feet. Ita Mex Oil Co.'s No. 1, 14 Lomas y Llanos, cemented 8-inch in hard gray lime at 1,561 feet. Mexican Sinclair Petroleum Corp.'s No. 8 Tananturo is in shale at 900 feet. National Lines (Federal zone) No. 21 Raventadero is in gray lime at 1,475 feet, and No. 13, Lot 13, Lomas y Llanos has set surface casing at 212 feet. Transcontinental Petroleum Co.'s No. 19 Barbarena is in shale at 260 feet. Tampascos Oil Co.'s No. 4 Barragan is spudded 90 feet in shale. The Texas Co. No. 6, Lot 17 Isleta is in shale and shell at 1,525 feet, and No. 10, Lot 16 Lomas y Llanos shut down for orders in the Tamasopa at 2,285 feet.

South Fields

In the south fields Huasteca Petroleum Co. (Mexican Petroleum) No. 54-A Cerro Azul is in broken lime at 1,785 feet; No. 55 in gray shale at 1,639 feet; No. 56 in brown shale at 1,410 feet, and Nos. 58 and 59 are in gray shale at 780 and 155 feet respectively. In Tierra Blanca, Husteca's No. 34 is drilling in gray lime at 2,220 feet, and No. 44 in gray shale at 1,690 feet. In Chapopte Nunez, No. 8 is in gray shale and pyrites at 2,090 feet. Up in Tres Hermanos, No. 7 is in hard sandy brown shale at 3,479 feet. In Granadilla, No. 1 is in gray shale with some streaks of the brown at 3,141 feet. Mexican Eagle Oil Co.'s No. 24, Lot 132 Amatlan is drilling in brown lime at 4,685 feet; No. 27, Lot 198 cemented 6-inch in shell at 1,958 feet; No. 44, Lot 125 has done the same with 8-inch at 1,755 feet in shale; No. 6 Lot 161 Chinampa is drilling in shale at 1,100 feet. Mexican Eagle is going back again into the San Geronimo sector, having a derrick up now for No. 16 there, and No. 20 Cerro Veijo, which it is also going to try again, is rigging rotary. South of the Tuxpam River, No. 2 Mecapepec is in hard sand with some shells at 2,405 feet, and it has a new location in this extreme southern district also, No. 1, Lot 2 Escobal, which is drilling in a sticky shale at 260 feet. In the Laguna de Tamiahua, Agwi Companies, No. 16 is drilling in sandy shale at 293 feet, and it continues waiting for casing on its No. 26 there, drilled 1,110 feet in blue shale. Cortez Oil Corp.'s No. 8 Aguada is proving a perfect hoodo. Reported last as fishing 3-inch dril stem at 4,360 feet; it is now trying to free 6-inch casing frozen at 3,500 feet as it was being run. The trouble started on this hole when it was around 5,000 feet originally. Cortez's No. 11 there is in gray shale at 3,030 feet. International Petroleum Co.'s No. 1 Santa Amalia is drilling in a presumable limestone at 3,410 feet. Mexican Gulf Oil Co.'s No. 30, Lot 146 Amatlan cemented 8-inch in gray shale at 1,774 feet.

At Corcovado

To revert to the northern fields consider Corcovado. A test that had a small showing of oil at 1,850 feet, Agwi Companies No. 2, Lot G has a fishing job now in brown-gray-green lime at 2,120 feet. Intermex Oil Co.'s No. 2, Lot 4-C is a deep test at 2,905 feet, just developing the Tamasopa lime a few feet before that depth. It looks a hopeless dry hole. The same company's No. 5 is around 1,450 feet in gray shale. Cosmos Oil Co.'s No. 1, Lot D, is running 8-inch at 458 feet, gray shale; No. 9, Lot G is drilling in 600 feet in gray shale, and No. 14, same, is spudding. Leonard and others' No. 1 Garruche-Corcovado cemented 8-inch in gray shale at 1,260 feet. Mexican Gulf Oil Co.'s No. 8, Lot 4, is in gray lime at 1,297 feet; No. 18, same lot, is in gray and brown lime at 1,756 feet; No. 20 in a broken lime at 920 feet and No. 21 is at a nominal depth in shale. Rich Mex Oil Co.'s No. 3, Lot B is around 2,175 feet in gray lime, and No. 4-A, Lot 2 is drilling at 1,110 feet in shale.

Miscellaneous Northern Fields

At Ebano, Mexican Petroleum Co.'s No. 39 La Dicha is drilling by tools at 2,035 feet in limestone; No. 14 Chapaco is running 10-inch in lime at 1,227 feet; No. 17 is in lime at 2,025 feet; No. 18 in gray lime at 1,725 feet; No. 19 cemented 8-inch at 1,225 feet in broken lime, and over in San Felipe, near the Corcovado border, No. 3 is rigging.

In the Topila district, Credito Petrolero, No. 15, Lot 10 Pac. de Agua, is drilling at 601 feet. Cortez Oil Corp.'s No. 1, Lot 8 Cahuayotes is drilling in white lime at 3,258 feet. Hatchman and others' No. 3 Tobalo is running 12½-inch at 110 feet in shale. Mexican Fuel Co.'s No. 17 Santa Fe is in gray shale at 725 feet, and No. 18, same, is in gray lime at 2,250 feet.

In the Marland Field, Cia. Pet. Franco Espanola, No. 21 Limon is in gray lime and asphalt at 2,675 feet; No. 22, same, is in lime at 2,000 feet.

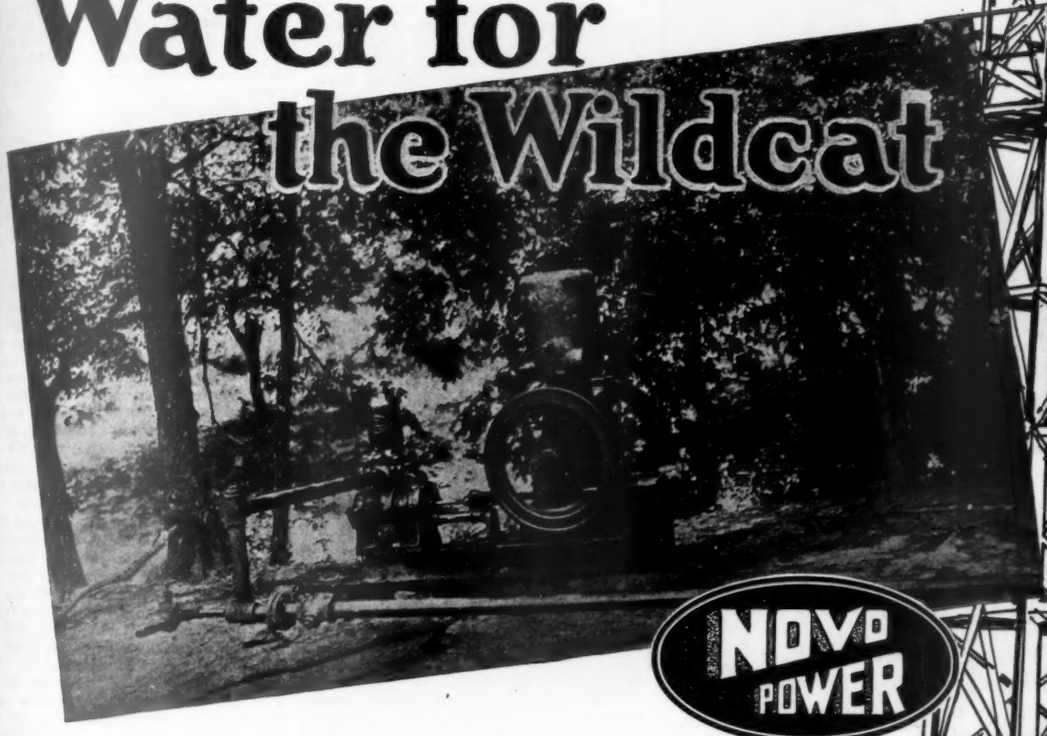
In El Barco, Kern Mex Oil Fields, No. 13 La Palma is in white lime around 2,100 feet, and No. 9 El Barco is drilling in gray lime at 1,585 feet. Mexican Gulf Oil Co.'s No. 67 El Barco is drilling in shale at 630 feet.

National Lines, in its right-of-way through Chapacao, has No. 7 there, which has been showing for a well, drilling in the Tamasopa at 2,107 feet and No. 9 in the same formation at 2,275 feet, while No. 11 cemented 10-inch in gray lime at 1,175 feet.

BLACKWELL WOULD KEEP GAS

OKLAHOMA CITY, Okla., Feb. 28.—Following a survey of the several gas-producing districts of Kay County, the Blackwell Chamber of Commerce has adopted a resolution declaring that gas should not be piped from those fields into Kansas and adjoining States. The resolution particularly deplored a proposal to take some of this gas to Wichita, Kans., saying it is "unnessary to the city of Wichita and irreparably injurious to the city of Blackwell." The resolution is directed against the laying of another trunk gas line from that district to Wichita and it petitioned the city of Wichita to deny a franchise to the promoters. Blackwell desires to hold the surplus gas of the area in order to develop its industries.

Water for the Wildcat



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OKLAHOMA FIELDS

(Continued from Page 42)

The Phillips Petroleum Co. was building a rig for No. 1, C SE NW SE, Section 20-24-5. Graham and others were spudding in No. 4 Rimmer, NW cor. SW SW, Section 16-20-6. The Jim Glenn Oil Co. was rigging up No. 4 Burgman, C NW SE SE, Section 16-20-6. The Magnolia Petroleum Co.'s No. 4 Burgman, C NE SW SE, Section 16-20-6, was drilling at 600 feet. The same company's No. 2 Rimmer, NE cor. SW, Section 16-20-6, was spudding in. The Twin State Oil Co. was spudding in No. 6 Flemming, NW cor. SE SE, Section 8-20-7.

The Amerada Petroleum Corp. was spudding in No. 1, C NE SW SE, Section 22-23-4. The Prairie Oil & Gas Co. was rigging up No. 2 Carey, C SE SE SW, Section 22-23-4. The Cosden Oil & Gas Co.'s No. 1 Weeks, C SW NW SW, Section 23-23-4, was spudding at 225 feet.

The Magnolia Petroleum Co.'s No. 1, C SW SW SW, Section 27-23-3, was drilling at 260 feet. The Watchorn Oil & Gas Co.'s No. 3 Diamond, CWL SW SW NW, Section 2-22-3, was abandoned on account of a bad hole at 2,985 feet. The Amerada Petroleum Corp. had a rig on the ground for No. 2, C SW SW SE, Section 22-23-4.

Tulsa County

The Echo Oil Co.'s No. 4 Grayson, SW cor. NE, Section 5-19-12, in Tulsa County, topped sand at 2,064 feet, and at 2,095 feet had 1,800 feet of oil in the hole. The Shaffer Oil & Refining Co.'s No. 4 Partridge, NE cor. NW SW, Section 5-19-12, was completed with sand at 2,071-72 feet, with initial production 290 bbls. The Sand Springs Home's No. 3 Berryhill, CWL SE NW, Section 5-19-12, was making 30 bbls. from sand at 2,099-2,104 feet. Thornton and others' No. 13 Berry, CNL NE SE SW, Section 20-19-12, was completed for 20 bbls. naturally in sand at 2,099-2,108 feet. The Sterling Oil & Gas Co.'s No. 4, SW cor. NW SW NW, Section 1-18-12, found sand at 2,274-91 feet, and was completed for 30 bbls. naturally. The National Drilling Co.'s No. 2 Henson, SW cor. NE NE, Section 1-20-13, was completed for 3,000,000 feet of gas in sand at 1,508-1,600 feet. The Schermerhorn Oil Co.'s No. 1-A Vann, NE cor. SW NE, Section 1-20-13, was dry and abandoned at 1,578 feet. The same owner's No. 3 Ingram, NW cor. SE NE, Section 1-20-13, was completed for 3,000,000 feet of gas in sand at 1,496-1,552 feet. The Echo Oil Co.'s No. 2 Smith, NW cor. NE SE, Section 29-20-13, was dry and abandoned at 1,498 feet. The Tulsa County No. 1 Varnest, NE cor. NW, Section 34-19-13, was dry and abandoned at 2,185 feet. The Sinclair Oil & Gas Co.'s No. 1 Johnson, SW cor. NW, Section 5-18-14, was dry and abandoned at 2,191 feet. Thompson & Black's No. 1-A Wetstone, SW cor. SE, Section 3-16-12, was completed for 22,700,000 feet of gas with sand at 1,685-1,750 feet. Lewis and others' No. 1 Berryhill, NE cor. SE SW, Section 1-17-14, was completed with sand at 1,307-18 feet, making 18 bbls. naturally. Winemiller and others' No. 3 C. Brown, CWL SW SW, Section 18-16-13, was completed with sand at 1,040-72 feet, and made 20 bbls. after a 100-quart shot.

The Williams & Woods Syndicate's No. 1-A Franklin, SE cor. SW, Section 36-19-11, was rigging up. The March Oil Co. was rigging up to deepen No. 2 Wisey, CEL SE SE, Section 36-19-11. The Sand Springs Home's No. 4 Berryhill, SW cor. NW, Section 5-19-12, was drilling at 725 feet. Munn Brothers were spudding in No. 1 Yargee, SE cor. SW SW, Section 20-19-12. H. O. Wilson's No. 3-A Postoak, CNL NE NW, Section 29-19-12, was drilling at 1,240 feet. W. E. Grimes' No. 5 C N half NW SE, Section 24-21-13, was drilling at 400 feet. The Echo Oil Co.'s No. 5 Burrell, NE cor. SW, Section 7-20-13, was drilling at 1,400 feet. C. E. Suppes was rigging up No. 1 Behen, NW cor. SE SW, Section 1-16-12. The Sheldon Oil Co. was rigging up No. 1-A Murray, NW cor. SW, Section 31-17-13. Bud Wilmost's No. 1 Montgomery, SE cor. SW NE, Section 36-17-13, was drilling at 200 feet. R. A. Craig and others were rigging up tools for No. 1-A Withers, CWL NW NW, Section 25-17-12.

Creek County

Sartain Brothers' No. 2 Antussee, SW cor. NW, Section 32-17-8, Creek County, was making 150 bbls. after a 100-quart shot at 3,508-18 feet. J. H. Wright's No. 3 Dawson, SE cor. NE SW, Section 24-17-10, was shot with 60 quarts at 1,805-27 feet, and was good for 35 bbls. The Texas & Pacific Oil Co.'s No. 1 Barnett, NW cor. NE SE, Section 6-19-9, topped sand at 2,716 feet, where a good show was had; the 6-inch casing was being set. The Riverland Co.'s No. 3 Marshall, NE cor. SE SE, Section 8-16-12, was deepened and made 525 bbls. naturally from sand at 2,359-70 feet. The Pure Oil Co. abandoned rig on No. 5 Vassar, NE cor. SE SW, Section 17-15-8. The same company's No. 3 Kernal, SE cor. NE, Section 30-14-8, was shut in for 5,300,000 feet of gas at 622-30 feet. The Prairie Oil & Gas Co.'s No. 3 Adams, SW cor. NE NE, Section 27-15-10, was completed with sand at 3,051-53 feet, and made 240 bbls. the first 24 hours; water broke in and the well stopped flowing. The H. F. Wilcox Oil & Gas Co.'s No. 3 Scott, C SW NW NE, Section 20-14-10, topped sand at 3,335 feet, and at 3,340 feet made three flows; estimated god for 500 bbls.

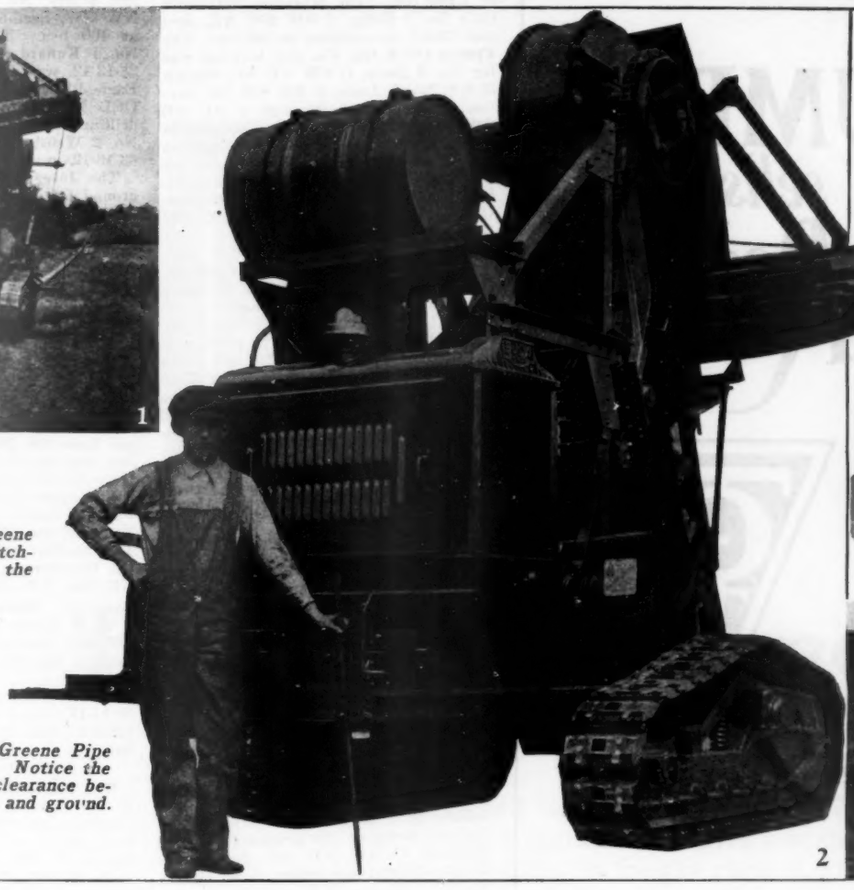
The Texas Co. was cleaning out No. 1 West, NE cor. SW NW, Section 17-18-9, at 2,537 feet. The Roxana Petroleum Corp. and the Wolverine Oil Co. were spudding in No. 1 Tucker, SW cor. NE SW, Section 18-17-8. The Savoy Oil Co. was deepening No. 4 Johnson, NE cor. SW NE, Section 23-17-8, at 2,790 feet, and had a rig on the ground for No. 5 Johnson, CNL NW NE, Section 23-17-8. The Olean Petroleum Co. had a rig up for No. 4 I. Washington, SE cor. NW SW, Section 32-17-8. The Prairie Oil & Gas Co. was spudding in No. 9 Pittman, C SE NW NW, Section 5-16-8. The Laurel Oil & Gas Co. had a rig up for No. 9 Knoll, C NE SW, Section 22-16-8. Bob Slater and others had a rig up for No. 1-A Ralston, NE cor. SE SE, Section 1-16-9. The Waite Phillips Co. had a rig up for No. 1 Snyder, NW cor. SW, Section 5-16-9. The Roland Oil Co.'s No. 1 Fortney, CEL SE SW SE, Section 6-16-9, had a showing of 12,500,000 feet of gas at 700 feet, and was cleaning out. The Waite Phillips Co. was spudding in No. 2 Hill, CEL NW SE, Section 6-16-9. The Transcontinental Oil Co.'s No. 2 Brady, NE cor. NW SW, Section 34-16-9, was drilling at 400 feet. The Prairie Oil & Gas Co. had a rig up for No. 8 Rentie, SE cor. NE SW, Section 2-14-8. The Skelly Oil Co. had a rig up for No. 4 McKann, C SW NE SW, Section 12-14-8. C. G. Tibbens had a rig on the ground for No. 3 Bruner, C NW SE SW, Section 12-14-8. F. R. Billingslea and the Skelly Oil Co.'s No. 3 Fields, CNL SW SE, Section 30-15-9, was drilling at 600 feet. The Texas Co. had a rig on the ground for No. 2 Harry, NE cor. NW, Section 27-15-10. The Shaffer Oil & Refining Co. had a machine rigged up for No. 1 Bob Long, NE cor. Section 6-14-9. The Twin State Oil Co. was spudding in No. 1 Jackson, SW cor. Section 22-14-9.

Seminole County

H. H. Taylor and others' No. 1, C NW NW SE, Section 35-9-6, in Seminole County, was dry and abandoned at 3,091 feet. The Dixie Oil Co.'s No. 2 Liggin, C NE SW SE, Section 25-8-7, had sand at 3,028-3,064 feet, and was swabbing 60 bbls. The Berry Petroleum Co.'s No. 1 Chupco, C SE SW SW, Section 1-8-8, was completed making 200 bbls. naturally from sand at 3,417-43 feet. The Magnolia Petroleum Co. abandoned No. 3 Tiger, CSL SE NW SW, Section 32-8-8, a rig. The same company's No. 2 Walker, CEL NE NW NW, Section 32-8-8, was completed making 1,300 bbls. initially, now 100 bbls. with 10 per cent b.s. from sand at 3,211-14 feet. The Magnolia Petroleum Co.'s No. 2 Frantz, C NW SW SW, Section 32-8-8, was making 70 bbls. after shots of 40 and 70 quarts at 3,976-4,007 feet.

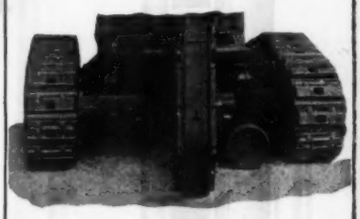
Holm and Jarvis' No. 1 Johnson, C

1—*A Barber-Greene Pipe Line Ditcher riding the pipe.*



2—*The Barber-Greene Pipe Line Model. Notice the exceptional clearance between frame and ground.*

3—*The Barber-Greene Pipe Line Model straddles pipe easily. Compactness permits the machine to follow pipe curves closely.*



4—*The finished job. Notice the clean-cut ditch.*

Riding Pipe Lines With the "Diggenest" Ditcher

Ample clearance between the ground and frame, the boom and crawlers permits the Barber-Greene Pipe Line Ditcher to ride pipe easily, even 12-in. pipe. Due to the compact crawlers and the vertical boom, which give this machine greater mobility than any other ditcher, the contour of the pipe can be followed closely. No matter how the curves are laid in the pipe, the Barber-Greene will dig the trench close to it at all times. The Barber-Greene can cut a curve with a 50-foot radius.

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Combined with tractor-crawler is a vertical digging boom that digs straight down.. No hand shoveling is required to start this boom. Simply start the engine, drop the boom and it digs straight down to full depth without it being necessary to start the crawlers in their forward motion.

These two features make it possible to dig a 50-foot radius curve or follow easily any curves in which the pipe may be laid. The crawlers are 14-in. wide, so that there is practically no danger of the machine banging down on the pipe.

Already this machine has been proved successful in pipeline digging, completing an 11-mile job near Joliet for the Prairie Pipe Line Company in a month's time, and a similar one near Kansas City of about the same length, in practically the same time.

Other users in all parts of the country find the vertical boom and rugged strength of the Barber-Greene Ditchers are cutting trenching costs and speeding up the work in practically every type of ground. A number of the more interesting of these are collected in our new catalog D-10. Send for a copy. No obligation.

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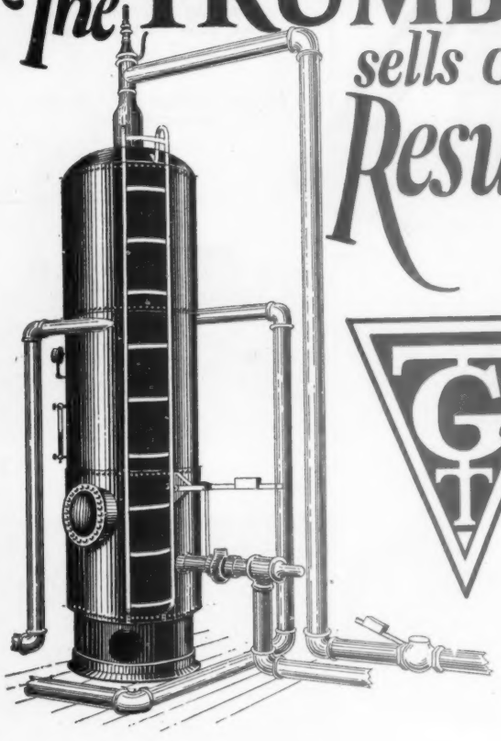

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SE SE SW, Section 22-9-8, was drilling at 1,100 feet. The Magnolia Petroleum Co.'s No. 1 Kelly, C SW SW NE, Section 12-8-7, was drilling at 500 feet. The Prairie Oil & Gas Co. was building rigs for No. 4 Amos, C SW NE SE, Section 31-8-8, No. 5 Amos, C NE SW SE, Section, 31-8-8, No. 3 Bowlegs, C SE NE SW, Section 31-8-8, and was spudding in No. 2 Bowlegs, C NE NE SW, Section 31-8-8. W. R. Ramsey was rigging up No. 2 Amos, C NW SE SE, Section 31-8-8-, No. 3 Salinda, C NW NW SE, Section 31-8-8, and No. 4 Salinda, C SW NW SE, Section 31-8-8.

Okfuskee County

C. W. Wangerine's No. 1 Callahan, NW cor., Section 25-29-9, in Okfuskee County, was dry and abandoned at 4,106 feet. The Amerada Petroleum Corp.'s No. 1, C NW NE NE, Section 20-12-10, was dry and abandoned at 3,285 feet. The Atlantic Oil Producing Co.'s No. 2 Fisher, C SE NW SE, Section 36-12-10, was shot with 40 quarts in sand at 3,050-62 feet, and was making 25 bbls. Schoenfelt's No. 1 Hawkins, CNL NE SW, Section 4-11-12, was shot with 100 quarts at 1,560-1,610 feet, and was good for 70 bbls. daily. Robinson and the Amerada Petroleum Corp.'s No. 5 Carter, C SW NE NW, Section 4-9-9, was making 12 bbls. on the pump from sand at 3,337-45 feet, after plugging back from 3,347 feet where water was found. The Transcontinental Oil Co.'s No. 8 Tiger, C NE NE NE, Section 4-9-9, was making 500 bbls. from sand at 3,281-3,306 feet.

The Atlantic Oil Producing Co.'s No. 1 Gray, C SW SW SE, Section 36-12-10, had 3,000,000 feet of gas at 833-50 feet and was drilling at 1,600 feet. The Barbara Oil Co. was rigging up No. 1, SW cor. SE NE, Section 3-11-11. Webster and others' No. 3 Tarvin, NW cor. NE SW, Section 3-11-11, swabbed 18 bbls. from sand at 2,642-43 feet, and was drilling at 2,860 feet. The Windsor Oil Co. had a rig on the ground for No. 2 Jameson, C NW NW SE, Section 22-11-11. Vincent and others were rigging up No. 1 Thomas, NW cor. SW, Section 28-11-11. The Cosden Oil & Gas Co. was spudding in No. 1 Richardson, C SE SE NE, Section 17-10-9.

Okmulgee County

The White Star Producing Co.'s No. 1 Roberts, SE cor., Section 25-16-14, was dry and abandoned at 3,310 feet. Jackson and Wise's No. 6 Grayson, CWL NW SE SW, Section 3-15-11, was completed with sand at 1,874-1,912 feet; it made 20 bbls. after a 140-quart shot. Kellough and Thompson's No. 1 Barnett, SW cor. SE, Section 29-15-11, was making 10 bbls. per hour from sand at 2,474-2,505 feet. Skelton and others' No. 1 Brown, NE cor. SE, Section 28-15-13, was dry and abandoned at 2,616 feet. A. W. Cline and others' No. 5 Beggs, NW cor. SW SE, Section 33-15-14, was dry and abandoned at 2,620 feet. Misener's No. 7 Love, NE cor. SW NE, Section 16-14-14, had sand at 796-818 feet, and made 10 bbls. after a 100-quart shot. The Eastern Oil Co.'s No. 8 Berry, C NE NE SW, Section 25-13-11, was making 70 bbls. from sand at 2,342-56 feet. The Josey Oil Co.'s No. 5 McCoy, C NW NW SW, Section 33-12-11, had a 100-bbl. show at 2,680-2,780 feet. The Monsette Oil Co.'s No. 1 Smith, C NE NW NW, Section 29-13-13, was dry at 3,020 feet. The Utah Oil Co.'s No. 4 Scott, CSL SE NE, Section 15-13-14, had sand at 1,905-09 feet, a break to 1,923 feet, and sand from 1,923 to 1,942 feet; the well was making 40 bbls. naturally. The Keener Oil & Gas Co.'s No. 5, SE cor. Section 35-12-13, had sand at 2,155-67 feet, and was good for 10 bbls. after a 40-quart shot.

The Waite Phillips Co.'s No. 5, C SE NW NW, Section 2-15-11, was drilling at 400 feet. The Beggs Oil & Refining Co. was building a rig for No. 1 Hawkins C N half, NW NW, Section 10-15-11. The Pollyana Oil Co.'s No. 1 Adam, C NW NE NE, Section 12-15-11, was drilling at 700 feet. The Eastern Oil Corp. had a rig on the ground for No. 9 Jefferson, C N half NW NE, Section 32-15-11, and for No. 10 Jefferson, NE cor. NW, Section 32-15-11. T. C. Muller and others had a rig up for No. 1 Adams, C NW NW NW, Section 4-15-12. Detrick and others' No. 1 Shephard, SW cor. NW SW, Section 20-13-12, was drilling at 400 feet. The Waite-Phillips Co.'s No. 1 Kanard, C SW SE SW, Section 28-13-12, was drilling at 250 feet. The Eagle Picher Lead Co.'s No. 3 Webster, CEL NW NW, Section 33-13-12, was drilling at 200 feet. The Holly Oil Co.'s No. 2 Webster, C NE SW NW, Section 33-13-12, was drilling at 750 feet.

The Josey Oil Co. had a rig on the ground for No. 7 McCoy, NW. cor. SW NW, Section 33-12-11, and for No. 8 McCoy, C NE NW SW, Section 33-12-11. W. C. Newman was rigging up No. 1 Arbuckle, CEL NE NE, Section 29-12-12. E. O. Campbell and others had a rig on the ground for No. 4, C SW NW, Section 30-13-15.

The Sheldon Oil Co. had a rig for No. 1 Coleman, SE cor. SW, Section 27-16-12, in the Sheldon Pool. The Shaffer Oil & Refining Co.'s No. 1 E. Coleman, SW cor. SE SW, Section 27-16-12, was making 9 bbls. of oil and 4,000,000 feet of gas from the Dutcher sand at 2,159-93 feet, and was drilling at 2,205 feet. The Hope Oil Co.'s No. 3 Vore, NE cor. NW SW, Section 34-16-12, was spudding in. Poe and others were spudding in No. 1 Vore, SE cor. SW NW, Section 34-16-12. The Sheldon Oil Co. and the Houston Oil Co. were spudding in No. 4 Vore, NE cor. NW, Section 34-16-12.

Muskogee County

W. B. Pine's No. 1-A Barnett, SE cor. NE NE, Section 24-16-15, in Muskogee County, was dry and abandoned at 1,807 feet.

J. M. Foltz's No. 1, CNL NE, Section 33-14-17, had a 5,000,000 feet of gas at 1,222-24 feet, and was drilling at 1,550 feet.

Hughes County

The Tidal-Osage Oil Co.'s No. 2 Baker, C SW NW SW, Section 3-9-11, was completed for 350 bbls. the first 24 hours from sand at 2,893-2,908 feet; No. 5 Baker, C NW SW SE, Section 4-9-9, made 60 bbls. initially from sand at 2,976-85 feet.

The Roxana Petroleum Corp.'s No. 1 Young, C NW NW NW, Section 16-9-8, had a show of 50 bbls. in the Gilcrease sand at 3,347-71 feet which was cased off; the well was drilling at 3,440 feet. The Tidal-Osage Oil Co.'s No. 1 Autry, C NW SE SW, Section 3-9-11, had 5,000,000 feet of gas at 1,616 feet, and was drilling at 1,620 feet. The same company was building a rig for No. 1 Harjo, C SE SE NE, Section 4-9-11. The Yarnell Drilling Co.'s No. 1, C NW NW NE, Section 23-9-10, underreaming 8-chin at 2,360 feet.

Pittsburg County

Ed Richards and others' No. 1 C NE, Section 29-6-13, in Pittsburg County was dry and abandoned at 1,305 feet.

Bryan County

G. T. Green was rigging up No. 1 Kamp, C SE NW NW, Section 28-8s-9e, in Bryan County.

Choctaw County

The Turner Oil Corp. was rigging up No. 1 McKinney, C SW SW SE, Section 32-5s-17e, Choctaw County.

Wagoner County

William McDougal's No. 1 Dan, SE cor. NW NW, Section 21-17-15, in Wagoner County, was drilling at 800 feet. Dodd and others' No. 2 CNL SW SE, Section 14-17-16, was good for 30 bbls. after a 60-quart shot at 783-93 feet. Sloman and Evans' No. 1 Murphy, SE cor. SW NE, Section 18-17-16, was completed for 6,500,000 feet of gas in sand at 978-993 feet.

Lincoln County

Selby and the Southwestern Petroleum Corp.'s No. 1 Bagwell, NW cor. SE, Section 3-14-5, had oil sand at 3,437-56 feet, and at 3,465 feet had water; it was plugged back to 3,456 feet, and was swabbing 50 bbls. after a 15-quart shot. The Magnolia Petroleum Co.'s No. 1 Ayres, SE cor. SW, Section 7-14-5, was dry at 3,830 feet. A. A. Peard's No. 1 Gallagher, CNL SE SE, Section 18-13-5, was dry at 3,885 feet. The Continental Oil Co.'s No. 1-A Powell, SE cor. NW NW, Section 17-15-3, was dry and abandoned at 840 feet.

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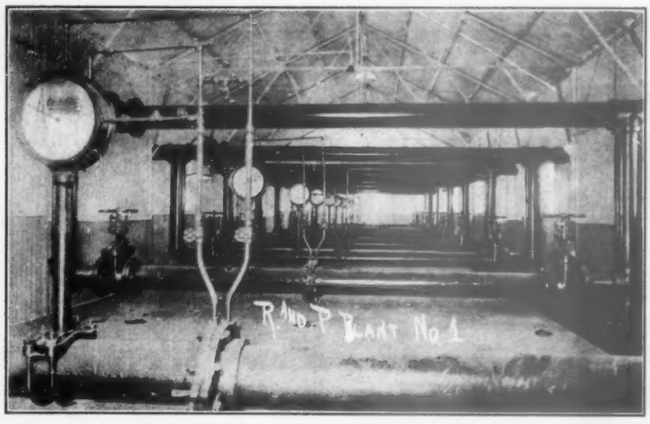

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THE COMPASS OF INDUSTRY

116

Stout, SE cor. NE NW, Section 3-14-5, was drilling at 150 feet. The Amerada Petroleum Corp. had a rotary rig up for No. 1 Oney, C SW SW NE, Section 19-14-6. The Oklahoma Natural Gas Co. was rigging up No. 1, SE cor. NE SE, Section 31-15-4. The Magnolia Petroleum Corp.'s No. 1 Lain, C SW NW NE, Section 3-14-5 was making 600 bbls. from sand at 3,397-3,442 feet. The Prairie Oil & Gas Co. was drilling at 650 feet in No. 3 Stout, SE cor. NE NW, Section 3-14-5, and was building rigs for No. 2 Stout, SE cor. NW, Section 3-14-5, and No. 4 Stout, NE cor. SE NW, Section 3-14-5. The H. F. Wilcox Oil and Gas Co. had a rotary rig up for No. 1 Tanksley, SW cor. NE, Section 15-14-6.

Murray County

The Block Petroleum Co.'s No. 1 Murray, NW cor. NE NW, Section 29-2-2, in Murray County, was dry and abandoned at 3,008 feet.

Cotton County

Clark and Cowden's No. 3 Tettleton, SW cor. SE, Section 9-1s-9w, in Cotton County, was dry and abandoned at 2,505 feet.

Carter County

The Magnolia Petroleum Co.'s No. 1 Westerly, C NE NE SW, Section 19-1s-3w, in Carter County, was completed with sand at 2,995-3,015 feet, and was pumping 120 bbls. Wirt Franklin's No. 1 Broughton, C NW SE NE, Section 28-1s-3w, was making 15 bbls. naturally from sand at 3,392-3,414 feet. The Humble Oil & Refining Co.'s No. 1 Hales, C NE NE SE, Section 28-1s-3w, was making 170 bbls. naturally from sands at 3,280-85 feet and 3,300-23 feet; No. 2 Hales, C NE SE SE, Section 28-1s-3w, was shut in for 13,000,000 feet of gas at 3,164-76 feet. The Atlantic Oil Producing Co.'s No. 1-A Lahman, C NE NW NE Section 25-2s-3w, had broken sands at 1,963-2,489 feet, solid pay at 2,544-55 feet. broken sands at 2,686-2,751 feet, and was good for 90 bbls. naturally. The Healdton Petroleum Co.'s No. 2 Bogle, C NE NE SE, Section 6-3s-2w, was completed for 100 bbls. from sand at 2,808-31 feet.

The Schermerhorn Oil Co.'s No. 4 McGill, C SW SE SE, Section 8-3s-2w, was drilling at 1,600 feet. Wirt Franklin's No. 3 Carpenter, C NE SW SW, Section 22-2s-3w, was drilling at 130 feet. The Magnolia Petroleum Corp. had a rig up for No. 9 Lahman, C SW SW SE, Section 23-2s-3w. The same company had a rig up for No. 4 Bennett, CSL SE SW NW, Section 31-2s-2w. The Sprague Oil Co. was spudding in No. 5 Bennett C W half SE NW, Section 31-2s-2w. Gillespie and others' No. 1, SW cor. Section 16-1s-2, was shut down at 147 feet. The Arbuckle Asphalt Co.'s No. 1 Price, C W half NW NW, Section 27-1s-2, was drilling at 1,000 feet. The Schermerhorn Oil Co.'s No. 2 McGill, C SW NE SE, Section 8-3s-2w, was a rig. Merrick and others were spudding in No. 3 Lowery, C NE NW SW, Section 9-4s-2w. Simpson and Fell had a rig up for No. 3 Walker, C NW SW NW, Section 10-4s-2w.

Dusters in Stephens County

The Magnolia Petroleum Co.'s No. 1 Johnson, SW cor. Section 18-1s-8w, in Stephens County, was dry and abandoned at 2,352 feet. The Ellis Drilling Co.'s No. 1-A Bridenthall, NE cor. SE, Section 19-1s-8w, was dry and abandoned at 2,385 feet. The Amerada Petroleum Corp.'s No. 11 Blaydes, SW cor. NE NE, Section 32-1s-8w, was dry and abandoned at 4,172 feet. Crump and Beard's No. 1 Warner, NE cor., Section 22-1s-8w, was dry and abandoned at 2,280 feet.

The Grisby Oil Co. was spudding in No. 1 Worrell, CEL SE SE NW, Section 22-1s-8w. The Walker Valley Oil Co. had a rig up for No. 1-A, C SE SE NW, Section 27-1s-8w. The Magnolia Petroleum Co. was rigging up to deepen No. 14, C E half SW NE, Section 33-1s-8w, and was drilling at 1,960 feet in No. 18, CSL SE NW NE, Section 33-1s-8w. The Magnolia Petroleum Co.'s No. 8 Ward, SE cor. Section 32-1-8w, was testing a sand at 2,077-78 feet. Anderson and Schoonmaker's No. 1 Russell, SE cor. NW SE NE, Section 13-2s-8w, was rigging up to deepen from 957 feet.

Cotton Valley

Malernee and others' No. 1 Fowler, NE cor. SW SW, Section 28-2s-10w, was drilling at 340 feet.

Beckham County

S. J. Nelson's No. 1 Brown, NW cor. NE SW, Section 35-9-25w, in Beckham County, was drilling at 1,700 feet.

Love County

The Magnolia Petroleum Co.'s No. 1 Crowe, C NE NE SE, Section 13-8s-2, in Love County, was drilling at 350 feet.

Caddo County

Briscoe and Hall's No. 3 Culp, NE cor. NW NE, Section 6-5-9w, Caddo County, was drilling at 240 feet.

Grady County

The Cotton Patch Oil Co. was moving in tools to deepen No. 1 Moore, NE cor. SW NW, Section 14-5-8w, Grady County. The Oklahoma Oil Co.'s No. 2 Meely, C NE SE NW, Section 23-5-8w, was drilling at 700 feet. The Nickles Oil Co. had a rig up for No. 3 Chandler, SE cor. NW SW, Section 26-5-8w. The Little Nick Oil Co.'s No. 2 Chandler, NE cor. SE, Section 27-5-8w, had 2,500,000 feet of gas at 1,293-1,437 feet.

Kelsey and Tarkington's No. 1-A Spain SE cor. Section 33-7s-6w, in Jefferson County, was dry and abandoned at 3,006 feet.

KANSAS FIELDS

(Continued from Page 42)

Johnson, C NE NE NE, Section 30-33-3, was drilling at 340 feet.

The Foster Petroleum Co.'s No. 1 McKnobb, C SW SW NE, Section 3-32-4, was drilling at 2,952 feet. The Sinclair Oil & Gas Co. had a rig on the ground for No. 2 Spangler, C NE SE NW, Section 13-32-4. Neely and the Marland Oil Co. had a rig on the ground for No. 2 Rockwell, C SE SW NE, Section 13-32-4. The J. A. Hull Co. was drilling at 700 feet in No. 1, C SE SE SE. Section 14-32-4; at 260 feet in No. 1, C NE NE SE, Section 23-32-4; and at 400 feet in No. 1 Newton, C NE NW NE, Section 26-32-4.

Marion County

The White Eagle Oil & Refining Co. was building a rig for No. 1 Warner, SE cor. SW SE, Section 8-21-4, Marion County.

Harvey County

C. B. Shaffer's No. 1 Thompson, NW cor. NE NW, Section 11-24-2, in Harvey County, was dry and abandoned at 2,820 feet.

Butler County

The Empire Gas & Fuel Co.'s No. 33, C S WSW SW, Section 11-28-4, in Butler County, made 115 bbls. initially from sand at 2,580-82 feet with 15 bbls. of water. Vickers and others' No. 1 Brainard, NE cor. Section 3-25-3, was completed with sand at 2,718-25 feet, making 119 bbls. naturally, later 60 bbls. The Phillips Petroleum Co.'s No. 1 Fitch, NW cor. NE, Section 5-25-4, was shot with 40 quarts at 2,738-46 feet, and was good for 10 bbls.

Vickers and others had a rig up for No. 1 Joseph, NW cor. Section 2-25-3, and was spudding No. 1, C SE SE SW, Section 32-24-4. The Empire Gas & Fuel Co. had a rig up for No. 155 Wilson, C SW SE NW, Section 8-25-5.

Sumner County

The Marland Oil Co. lost No. 1 Lindsay, C SE SE NW, Section 22-34-2, in Sumner County, at 325 feet, and skidded the rig. The Prairie Oil & Gas Co. was spudding in No. 1, C SE SE NW, Section 33-34-2. The Phillips Petroleum Co. had a rig on the ground for No. 1 Jones, C SW SW NW, Section 8-34-1.

Sedgwick County

The Roxana Petroleum Corp. and others had a rig on the ground for No. 1 Crawford, NW cor. NE NW, Section 26-28-1, in Sedgwick County.

Saline County

The Brown-Woodward Oil Co.'s No. 1, SE cor. Section 26-15-2w, in Saline County, was drilling at 1,220 feet.

Osborne County

C. E. Knight was moving in tools for No. 1 Bealby, NE cor. NW NE, Section 9-10-14w, in Osborne County.

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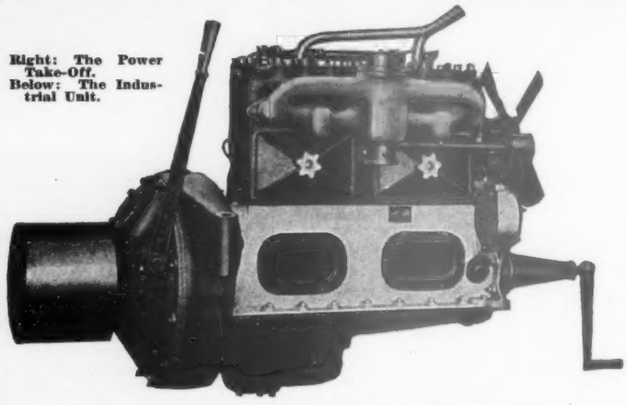

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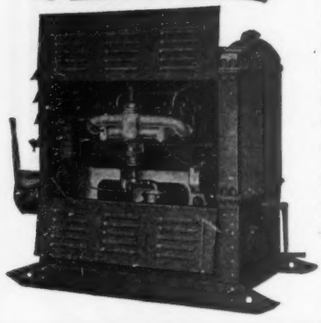

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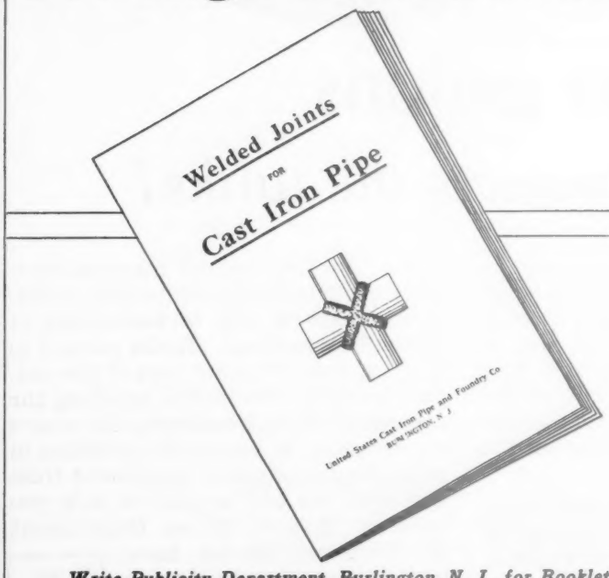

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EAST CENTRAL TEXAS

(Continued from Page 36)

sand at 2,970-92 feet, pumping 300 bbls., 50 per cent water.

Jack Clark and others' No. 1 Longbotham, dry and abandoned at 3,021 feet.

Farish, Watts & Collins' No. 6 Jackson, sand at 2,970-3,010 feet, 175 bbls.

Habgood and others' No. 2 Williams, location abandoned.

Humble Oil & Refining Co.'s No. 6-A E. D. Crouch, sand at 2,965-3,001 feet, pumping 100 bbls.; No. 7-A E. D. Crouch, sand at 2,960-3,000 feet, 275 bbls.

Humble Oil & Refining Co.'s No. 2-A Stubbs, sand at 2,999 to 3,004 feet, 85 bbls.

Humble Oil & Refining Co.'s No. 14 E. D. Crouch, sand at 2,955-90 feet, 600 bbls.; No. 15 Crouch, sand at 2,960-89 feet, 540 bbls.

Oxford Oil Co.'s No. 1 Allen, Wortham Townsite, abandoned at 2,880 feet.

Tarver and others' No. 2 Young, Wortham Townsite, dry and abandoned at 3,055 feet.

Humphreys Boyd Oil Co.'s No. 3 Manning, sand at 3,004-20 feet, 150 bbls.

Humphreys Boyd Oil Co.'s No. 4-B W. E. Smith, sand at 2,987-3,016 feet, 300 bbls.; No. 7-B Smith, sand at 2,996-3,009 feet, 200 bbls.

Humphreys Boyd Oil Co.'s No. 2-A W. D. Wilson, sand at 2,995-3,010 feet, 200 bbls.; No. 7-A W. D. Wilson, sand at 3,000 feet, 300 bbls.

Humble Oil & Refining Co.'s No. 7-A Lindley, sand at 2,995-3,007 feet, 300 bbls.; No. 8-A Lindley, sand at 2,965-3,000 feet, 100 bbls.

Humble Oil & Refining Co.'s No. 3 Simmons, dry and abandoned at 2,993 feet.

Humphreys Boyd Oil Co.'s No. 11 Ferguson, sand at 2,970-92 feet, 200 bbls.

Humphreys Boyd Oil Co.'s No. 2-B W. E. Smith, sand at 2,979-99 feet, 200 bbls.; No. 5-B W. E. Smith, sand at 2,997-3,012 feet, 150 bbls.; No. 8 W. E. Smith, sand at 3,003-12 feet, 600 bbls.

Humphreys Boyd Oil Co.'s No. 5 Ferguson, sand at 3,002-24 feet, 200 bbls.; No. 8 Ferguson, sand at 3,003-10 feet, 600 bbls.; No. 10 Ferguson, sand at 2,998-3,015 feet, 200 bbls.

Godley Oil Co.'s No. 2 Ferguson, sand at 3,024-27 feet, 80 bbls.

Magnolia Petroleum Co.'s No. 1 N. B. Boyd, sand at 2,990-3,018 feet, 400 bbls.; No. 22 Boyd, sand at 3,010-20 feet, 600 bbls.

Navarro County Completions

Recent completions in the Powell Field include the Humble Oil & Refining Co.'s Nos. 4 and 5 Kent, 25-bbl. wells and the Pure Oil Co.'s Nos. 9 and 10 Kent, 25 bbl.-wells, all in the 1,600-foot sand. The Andrews Petroleum Co.'s No. 2 Williamson, dry and abandoned at 3,102 feet and Bridwell & Gray's No. 4 Harvard, abandoned at 670 feet. The locations for the Simms Oil Co.'s No. 1 Howell and Williams & Pyles' No. 1 C. Boyd have been abandoned.

Robert Penn's important test on the J. White farm, Boren survey, between the Currie and the Wortham Field was drilled to 3,132 feet, where it stands a hole full of salt water.

GULF COAST

(Continued from Page 38)

1,340 feet. Rigs are being set up for Nos. 7 8 and 9 Kitselman and St. Albans' No. 4 Holbein is drilling around 1,455 feet. Derricks are up for Nos. 5 and 6. No. 7 is a location. The Plateau-Wheat interests' Nos. 2 and 6 are drilling, with locations for Nos. 3, 4 and 5. The Plateau-Buchanan interest has a location for No. 3 Holbein. A derrick is standing for the Rycade-Rydal joint No. 1 Allen. The Magnolia Petroleum Co. spudded in Nos. 4 and 5 Thompson. Buffam and others' No. 1 is deepening.

Luling Field

Brownlee and others' No. 1 Fields on the Caldwell County side of the Luling Field is reported making 400 bbls. at 2,200 feet. The important news from there, however, is the report that the United North and South Oil Co.'s No. 1 Callahan, 5 miles northeast of the field and south of Lockhart, is making 4 bbls. an hour, which means a new structure in Caldwell County. Much acreage is now being blocked on the showing on the Callahan lease.

The Houston Oil Co. is drilling in No. 7 Cartwright as a gas well in Live Oak County and will soon start six more rigs to work within the defined gas area. Some of the directors of the company, accompanied by Eastern bankers and representatives of bond and brokerage houses are now in Live Oak County investigating the project to lay 210 miles of pipe line and pipe the gas to the vicinity of Houston for distribution among refineries, sugar mills, sulphur plants and other industries. No attempt will be made for the present to retail the gas among domestic consumers. The Eastern financiers spent the week in the neighborhood of Houston looking over the prospects.

Coastal Wildcats

The Rycade Petroleum Co. ran into rock salt in No. 1 Meier in Fort Bend County at 1,155 feet, after being in gyp from 640 feet. It is on the Wisdom Dome and is located 1,200 feet south from No. 2 Nash there. The Wisdom Dome is a seismograph discovery. The Gulf Coast Development Co.'s No. 3 Erie Townsite is below 5,300 feet.

In Brazoria County, the Gulf Co.'s No. 1 Burns, 2½ miles west of the town of Brazoria, is drilling around 2,400 feet. The same company has started No. 1 Flagg Pond, southwest of West Columbia and has derrick material on the ground for a test on the Nash 300 acres north of Manor Lake. All three tests follow explorations previously made with the seismograph.

The Port Arthur Oil Development Co. is setting casing in the northern part of Jefferson County. The Texas Co.'s No. 1 Neches Canal, south of Nome, is drilling below 1,900 feet.

At High Island, Galveston County, the Sun Oil Co. is testing No. 2 Broussard at 3,200 feet, using screen pulled from No. 7 Cade. The Gulf Co.'s No. 2 Smith is around 3,210 feet.

The Texas Co. set casing in No. 2, a shallow test at Hockley Dome, Harris County, at 582 feet. No. 1 Warren, a deep test there is below 1,800 feet.

Gorrells and others' No. 1, located on the Colorado River, near La Grange, Fayette County, is reported showing some oil and gas at 1,820 feet.

In Bastrop County, the Cardinal Oil Co.'s No. 1 is below 2,700 feet. The Bristol Oil & Gas Co.'s No. 2 English is rigging. It is 6 miles southeast of Smithville. M. A. Currie is idle on Barton Creek, south of Smithville. A derrick is standing north of Plum.

GAS LINE TO VENTURA FIELD

The Southern Counties Gas Co. is preparing to lay a 60-mile pipe line from the Ventura oil field to Los Angeles territory to carry the natural gas produced in that field which at present amounts to 20,000,000 feet per day. There is promise of considerable increase in both gas and oil production since deep drilling operations by General Petroleum and an associated oil company in the past two weeks not only brought the daily average production of the field from 7,500 bbls. from 25 wells to 18,000 bbls. from 28 wells, but the gas discharge has more than doubled, and other operators in the field including the Shell Co. are drilling deeper to the more prolific sands.

NEW RUMANIAN CONCESSION

In connection with the reorganization of the Steaua Romana Oil Co. it is reported that after lengthy negotiations between the British, French and Rumanian groups, the Rumanian Government and the banks, an agreement was reached at Paris recently. This provides that the Rumanian-owned Steaua Romana take over one-half of the debt of Rumanian financiers to the British and French interests, the other half to be redeemable in 20 years. The Rumanian Government grants a new concession to the company, of a half square mile of oil fields, situated at Moreni, Runcu and Ochiuri.

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Butler, Pa.
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Cromwell, Okla.
Cushing, Okla.
Eastland, Texas
Emlenton, Pa.
Holdenville, Okla.
Hominy, Okla.
Houston, Texas
Knox, Pa.
Marland, Okla.
Morrison, Okla.
New Martinsville, W. Va.
Okemah, Okla.
Pawhuska, Okla.
Ponca City, Okla.
Shidler, Okla.
Shreveport, La.
Tulsa, Okla.
Vernon, Texas
Washington, Pa.
Waynesburg, Pa.
Webb City, Okla.
Weleetka, Okla.
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Woodsfield, Ohio
Winfield, Kans.
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DISTRIBUTORS:

Clarion County Machine Co., Knox, Pa.
A. F. Keck & Co., Butler, Pa.
Lloyd Smith Co., Bradford, Pa.
H. B. Mitchell Co., Emlenton, Pa.
New Martinsville Supply Co., New Martinsville, W. Va.
Murray Tool & Supply Co., Tulsa-Cleveland, Okla.
Federal Supply & Machine Co., Augusta-Winfield, Kans.
Atkinson & Sandefer, Breckenridge, Tex.
Norvell-Wilder Hdwe. Co., Beaumont-Houston, Tex., and Shreveport, La.

WICKWIRE SPENCER STEEL CORPORATION
41 East Forty-Second Street New York

NORTH CENTRAL TEXAS

(Continued from Page 32)

feet; Staley and others' No. 1 King, dry at 1,700 feet.

Throckmorton County—Skinner and others' No. 1 Mitchell, dry at 1,650 feet.

Somerville County—Glenrose Oil & Gas Co.'s No. 1 Buzan, dry at 4,000 feet.

Wichita County Drilling

Art and others' No. 2 Terhune is drilling at 665 feet; Atlantic Oil Production Co.'s No. 11 Overby at 1,780 feet; Empire Gas & Fuel Co.'s No. 6 Pierce is fishing at 1,976 feet; Gardner and others' No. 10 Waggoner is drilling at 1,512 feet; Hawkins and others' No. 4 Watkins at 1,750 feet; same company's No. 5 Watkins at 1,740 feet; Humble Oil & Refining Co.'s No. 17 Douglas at 1,733 feet; Kruger and others' No. 11 Allen and Kemp at 1,200 feet; Magnolia Petroleum Co.'s No. 9 Abernathy at 1,430 feet; No. 12 Douglas at 1,080 feet; No. 67 Honaker at 525 feet; No. 11 Maer at 1,650 feet; No. 18 Maer is underreaming; No. 42 Rio Bravo is underreaming; No. 43 Rio Bravo is setting casing at 1,010 feet; No. 3 Watkins has an oil showing at 1,769 feet; Moore and others' No. 3 Burnett drilling at 680 feet; O'Neil and others' No. 14 Rio Bravo at 450 feet; Parker Brothers' No. 2 Lane at 1,000 feet; Perkins and others' No. 13 Burnett, at 1,200 feet; Petroleum Production Co.'s No. 3 Allen and Kemp at 1,390 feet; No. 12 Maer at 1,600 feet; Riggs and others' No. 1 Burnett has an oil show at 1,467 feet; Ryan Petroleum Co.'s No. 1 Henson is drilling at 900 feet; No. 27 Nance has an oil showing at 1,689 feet; No. 29 Nance is drilling at 1,200 feet; The Texas Co.'s No. 298 Waggoner is fishing at 2,116 feet; Texhoma Oil & Refining Co.'s No. 1-E Burnett at 1,505 feet; No. 1 Throckmorton is plugging back to 1,794 feet; Waller and others' No. 1 Waller is spudding; Adams and others' No. 2 Adams is cleaning out at 1,898 feet; F. H. E. Oil Co.'s No. 1 Hefley is ratholing at 1,175 feet; Magnolia Petroleum Co.'s No. 2 Morgan is drilling at 1,450 feet No. 11 Beach is setting casing at 840 feet; Texhoma Oil & Refining Co.'s No. 1 Bailey is drilling at 1,511 feet; Simms Oil Co.'s No. 2 Dutton is drilling at 1,800 feet.

Archer County Drilling

Humble Oil & Refining Co.'s No. 3 Orton is spudding; Wolfe and others' No. 2 Chilson is drilling at 1,410 feet; Atlantic Oil Production Co.'s No. 1-C Parrish is underreaming; Bridwell and others' No. 6 Wilson is drilling at 400 feet; Carter and others' No. 1 Wilson at 1,320 feet; Dawson and others' No. 1 Powell at 610 feet; Forgy and others' No. 1 Pearston at 1,410 feet; Franklin and others' No. 4-B Parrish is underreaming; Howell and others' No. 1 Wilson is drilling at 1,510 feet; Lincoln and others' No. 3 Oil Investment Co. is fishing at 1,170 feet; Phillips and others' No. 7 Wilson is drilling at 500 feet; No. 8 Wilson at 1,492 feet; No. 9 Wilson has an oil showing at 1,518 feet; Prairie Oil & Gas Co.'s No. 32-D Shaw is drilling at 1,100 feet; Saunders and others' No. 1 Sprague is underreaming; Simms Oil Co.'s No. 6 Parrish at 1,400 feet; Staley and others' No. 9 Wilson at 1,520 feet; Texhoma Oil & Refining Co.'s; No. 1 White is underreaming Young and others' No. 1 Matthews is drilling at 1,010 feet; Archer Oil Co.'s No. 1 Coffield at 1,284 feet; Dee Brothers' No. 1 Sadaw at 1,160 feet; Green and others' No. 4 Abercrombie at 1,100 feet; Magnolia Petroleum Co.'s No. 1 Lauster at 1,700 feet; Mitcham and others' No. 1 Wilson at 1,000 feet; Southern Exploration Oil Co.'s No. 1 Pace at 1,100 feet.

Wilbarger County Drilling

Atlantic Oil Production Co.'s No. 1 Parker is underreaming; Barkley and others' No. 1 Stephens is plugging back to 1,850 feet; Bridwell and others' No. 5 Dill is drilling at 800 feet; No. 7 Stephens at 900 feet; No. 1 Waggoner at 650 feet; Burton and others' No. 1 Castlebury is drilling an oil sand at 1,330 feet; No. 1 Waggoner is drilling at 1,115; Continental Oil Co.'s No. 2 Zipperle is spudding; Wood and others' No. 1 George is drilling at 760 feet; Hamilton and others' No. 1 Kesster at 1,865 feet; No. 1 Neal at 500 feet; Humble Oil & Refining Co.'s No. 1 Castlebury has an oil show at 1,748 feet; No. 6 Castlebury has an oil and gas showing at 1,080 feet; No. 7 Castlebury is drilling at 960 feet; No. 8 Castlebury at 1,047 feet; No. 9 Castlebury at 1,119 feet; No. 10 Castlebury at 330 feet; No. 1-C Waggoner is underreaming; Key and others' No. 1 Waggoner is drilling at 850 feet; Knight and others' No. 1 Waggoner is spudding; Kolp and others' No. 3 Waggoner is drilling at 400 feet; Levy and others' No. 1 Wheeler at 1,430 feet; Lippard Oil Co.'s No. 1 Fluhman at 1,360 feet; McCamey and others' No. 3 Richardson at 400 feet; No. 4 Richardson at 1,200 feet; No. 2 Stephens has oil and gas showing at 1,265 feet; No. 5 Stephens at 500 feet; No. 6 Stephens spudding; No. 9 Stephens spudding; No. 11 Stephens spudding; Magnolia Petroleum Co.'s No. 67 fee spudding; No. 47 Sumner at 1,470 feet; Mulligan and others' No. 1 Waggoner fishing at 1,110 feet; Oxford Oil Co.'s No. 2 Waggoner spudding; Priddy and others' No. 1 Castlebury has an oil show at 1,729 feet; Prince Brothers' No. 1 Zipperly has an oil show at 2,229 feet; Ray and others' No. 7 Bond is drilling at 1,200 feet; Ruff and others' No. 1 Waggoner at 1,700 feet; South Vernon Oil Co.'s No. 13 Stephens at 700 feet; Staley and others' No. 2 Stephens at 1,100 feet; No. 3 Stephens at 900 feet; The Texas Co.'s No. 1-B Castlebury is underreaming; No. 202 Waggoner is drilling at 2,000 feet; Texhoma Oil & Refining Co.'s No. 1 Bettes at 1,200 feet; No. 1 Thomas underreaming; Winnipeg Oil Co.'s No. 5 Bond at 1,750 feet; No. 6 Bond at 1,000 feet; Wood and others' No. 1 Streit at 1,500 feet.

Reagan County Drilling

Big Lake Oil Co.'s No. 16 University at 2,555 feet; No. 18 University setting casing at 2,320 feet; No. 19 University at 490 feet; No. 20 University at 460 feet; No. 21 University at 245 feet; No. 22 University at 500 feet; No. 23 University at 380 feet; No. 24 University at 475 feet; California Co.'s No. 1 University pulling casing at 3,480 feet; Cogdell and others' No. 1 University fishing at 360 feet; Piot Oil Co.'s No. 1 University at 625 feet; Simms Oil Co.'s No. 1 Sawyer has sulphur water at 3,040 feet; Texon Oil & Land Co.'s No. 2 Group 2 University fishing at 208 feet; No. 4 Group 1 University swabbing and cleaning out at 3,146 feet; No. 5 Group 1 University fishing at 105 feet; No. 6 Group 1 University setting casing at 460 feet; No. 7 Group 1 University at 1,800 feet; No. 8 Group 1 University at 600 feet; No. 9 Group 1 University at 240 feet; University Oil Co.'s No. 1 University at 2,762 feet; Wrightsman and others' No. 1 Ingham cleaning out at 2,030 feet.

Wildcats Drilling

Baylor County: Andrade and others' No. 1 Cockrell at 1,300 feet; Duke and others' No. 1 Dippery at 800 feet; McCaldin and others' No. 1 Martin at 1,000 feet; Maer and others' No. 1 Leathers at 1,310 feet; Richardson Brothers' No. 1 Wallace at 1,510 feet; Sheldon and others' No. 1 Mills fishing at 500 feet.

Hutchinson County: Barnum and others' No. 1 Johnson has a show of oil at 2,961 feet; Dixon Creek Oil Co.'s No. 1 Smith is drawing out gas at 2,940 feet; Douglas Oil Co.'s No. 1 Whittenburg has oil showing at 3,062 feet; New Domain Oil Co.'s No. 1 Barton is drilling in lime at 2,600 feet; Amarillo Oil Co.'s No. 2-B Bivens is killing gas at 2,644 feet; Prairie Oil & Gas Co.'s No. 1 Shaw is fishing at 3,217 feet; Twin Six Oil Co.'s No. 1 Kingsland spraying oil at 2,988 feet; Western Enterprise Oil & Gas Co.'s No. 1 Smith is plugging off salt water at 3,105 feet; Wilson and others' No. 1 Whittenburg is showing oil at 2,905 feet.

Moore County: Amarillo Oil Co.'s No. 1-A Masterson is fishing at 1,995 feet.

Potter County: Amarillo Oil Co.'s No. 1 Warrick has a show of gas at 2,870 feet; No. 1 Bush is fighting gas at 3,495 feet; No. 3-A Bivens is drilling in lime at 2,075 feet.

Carson County: Premier Oil Co.'s No. 1 Burnett is drilling a porous lime at 2,637 feet; Marland Oil Co.'s No. 1 Burnett has tools hung at 3,001 feet; The Texas Co.'s No. 5 Burnett is drilling in lime at 2,560 feet; No. 2-A M. C. Burnett setting casing at 2,848 feet.

Gray County: Anderson and others' No. 1 Bradford is drilling at 1,736 feet; Clark and others' No. 1 Combs and Worley is fishing at 2,775 feet; Danciger Oil & Refining Co.'s No. 1 Bowers is drilling at 705 feet; Holmes and others' No. 2 Morse has an oil show at 2,975 feet.

Wheeler County.: Whittington and others' No. 3 Williams and Laycock is spudding.

Knox County: Sanders and others' No. 1 Lawson is fishing at 900 feet.

Clay County: Atlantic City Production Co.'s No. 1 Scaling fishing at 3,112 feet; Bennett and others' No. 1 Holloway at 785 feet; Holmock Oil Co.'s No. 1 Gore at 200 feet; Lone Star Gas Co.'s No. 22 Martin at 300 feet; No. 1 Texas Co. is underreaming; Southern Exploration Oil Co.'s No. 1 Dunn is drilling at 1,470 feet.

Montague County: Daniels and others' No. 1 Howard is drilling at 1,120 feet; Humphreys Boyd Oil Co.'s No. 1 Jones is drilling a gas sand at 410 feet; No. 3 Maddox at 2,012 feet; Petroleum Production Co.'s No. 1 Howard at 2,200 feet; The Texas Co.'s No. 3-A Gist in sticky shale at 1,406 feet; No. 1 Salmon is underreaming; Texhoma Oil & Refining Co.'s No. 2 Howard has an oil show at 1,002 feet; No. 3 Howard is underreaming.

Cooke County: Big Indian Oil Co.'s Oil & Gas Co.'s No. 1 Davis is rigging to pump at 3,529 feet; Leonard and others' No. 1 Hamilton at 730 feet; Pettit and others' No. 1 Nelson at 900 feet; Rawson and others' No. 1 Aldridge at 1,500 feet.

Grayson County: Clopton and others' No. 1 Thorne is underreaming.

Wise County: Boonville Oil Co.'s No. 1 Carter at 1,200 feet.

Mitchell County: Eastland Oil Co.'s No. 1 Keynard is drilling at 2,540 feet; Sloan and others' No. 3 Miller is cleaning out at 3,025 feet; California Co.'s No. 12 Morrison is drilling at 2,710 feet.

Loving County: P. V. Petroleum Co.'s No. 1 Russell is drilling at 515 feet.

Sterling County: Chicago Texas Oil & Gas Syndicate's No. 1 Durham at 1,700 feet; No. 2 Durham is equipped to pump at 1,406 feet.

Coke County: West Virginia Oil Market Association's No. 1 Mimms at 1,200 feet.

Irion County: Glayds Belle Oil Corp.'s No. 1 Suggs at 1,605 feet; Virginia Texas Petroleum Co.'s No. 1 Nolke at 2,140 feet.

Pecos County: Arkansas Fuel Oil Co.'s No. 1 Blackstone at 1,500 feet; Plymouth Oil Co.'s No. 1 Perry has sulphur water at 2,250 feet.

Crockett County: Alidor Oil Co.'s No. 1 University is drilling at 1,700 feet; Knonwah-Angelo Oil Co.'s No. 1 University at 950 feet.

CRACKING SUITS SET FOR HEARING MARCH 13

CHICAGO, Feb. 28.—The case of the United States versus the Standard Oil Co. of Indiana and other oil companies regarding the cracking process patents was called yesterday and adjourned for two weeks to permit the parties to the suit to agree on a stipulation to the effect that when testimony is to be taken on any line that a ruling may be had from the court whether the testimony is competent or not thus saving much time.

When the case is called on March 13, the appointment of a special examiner or master to hear testimony will be made and the taking of testimony begun.

SELLING RUMANIAN OIL

Rumanian oil in storage is estimated at 560,000 bbls. against 175,000 bbls. a year ago. Effort is being made to dispose of part and bring domestic prices up to the world level.

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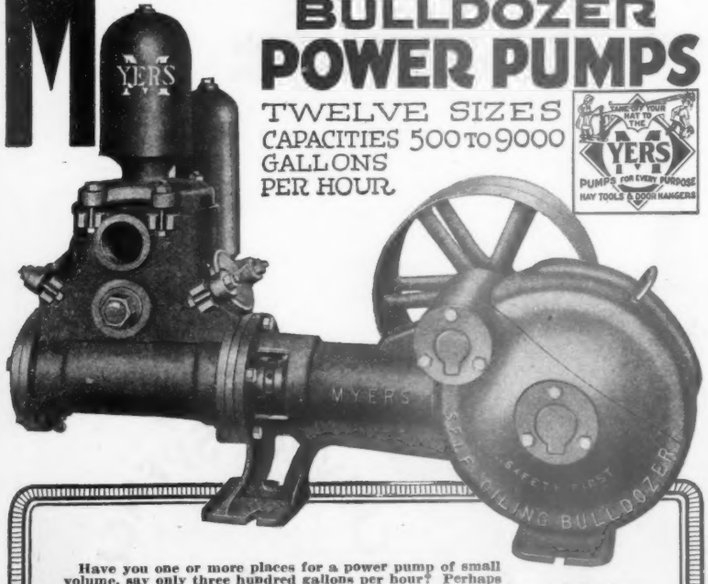

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Dunn Safety and Dunn Speed are embodied in the maximum degree in this new Dunn Safety Tubing Elevator—a radical advance in elevator building.

The Dunn Safety Tubing Elevator is fast and safe. *The safety factor is automatic and is not dependent upon the latch.* The door cannot be opened while the elevator is carrying the load. The door, latch and hinge interlock with the body in a manner that insures against accidents.

Get your order in early

The advantages of a single-link tubing elevator are many, but, nevertheless the Dunn Safety Tubing Elevator may be had in both single and double link types.

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Eight sizes
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America's Leading Wrench Makers for nearly 40 years.

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CANADIAN FIELDS

(Continued from Page 46)

In Kent County, the Stark and Spence well on the Ball farm, Raleigh Township, near Fletcher has been tubed, but is still waiting for a capacity test. A flush production of 60 to 75 bbls. a day is regarded as possible. No new locations have yet been made by the Stark and Spence interests. MacGardiner and associates of Chatham are reported to be getting to drill an offset well to the Spence producer. The Union Natural Gas Co. has made a location for a test of the Tilbury sand on the Barr farm, back of the Lake lots in the old Tilbury Field. In Dover West Township, Kent County, the Union has moved equipment to a new location for a deep test close to and just west of No. 13, the largest producer so far drilled in this field. Owing to high water, operations are at a standstill.

In Norfolk County, the Dominion Natural Gas Co. No. 4 in the new Courtland Field is reported drilling between 500 and 600 feet. No. 2 is still shut down. The Dominion Natural Gas Co. is reported to have located a shallow test near Alberton, in Wentworth County, a short distance east of the Onondaga Field.

The Natural Gas Board of Reference for Ontario held a preliminary sitting at Sincoe on February 24, in connection with the application of the Dominion Natural gas Co. for increased rates in the town of Simco, the villages of Port Dover, Port Rowan, Delhi and Vienna, and the townships of Malahide, Middleton, Houghton, North and south Walsingham, Charlotteville, Woodhouse and Townsend. Simcoe and Port Dover are opposing the application on the ground that the company had been recently granted a higher rate on the understanding that no further rate increases would be asked till the franchise expired. The Natural Gas Board set April 2 as the date for the hearing, which will be held at Simcoe. Another hearing will shortly be held at Aylmer in connection with the application of the Central Pipe Line Co. for rate increases in Aylmer, Vienna and other points supplied by the company from the Richmond and Vienna fields.

N. LOUISIANA-ARKANSAS

(Continued from Page 48)

for No. 2 Fincher, Section 32-15-16; J. K. Hughes is drilling No. 2 Reeves, Section 28-15-16, at 2,018 feet.

H. L. Hunt and others set 10-inch casing at 61 feet in No. 11-C Halton, Section 26-15-17; set 6-inch casing at 2,.285 feet in No. 12-C Halton, same section, and drilling at 2,228 feet; rigging up No. 4-A Myatt, Section 22-15-17, and in same section have derrick up for No. 3-A Myatt, drilling No. B-5 Myatt, same section, at 2,150 feet; swabbing to test 19 feet of sand at 2,335 feet, in No. 3 Street, Section 26-15-17, and stopped 3 inches in gumbo at 2,338 feet.

J. W. King is waiting on standard rig with 1,000 feet of oil and 4 feet of sand in the hole at 2,316 feet in No. 2 Jackson, Section 27-15-16; Leon and others drilling hard rock at 1,930 feet in No. 2 Berg, Section 4-16-15.

Magnolia Petroleum Cq. made location for No. 2 Bettie Clawson, Section 35-15-17; Marine Oil Co. has derrick up for No. 4 Hays, Section 4-16-15; McCorkle and others set 10-inch casing at 40 feet in No. 2-A Smith, Section 25-15-17.

Murdock and others set 10-inch casing at 42 feet in No. 1 Riley, Section 22-15-17; Penguin Oil Co. tested dry No. 1 Hardin, Section 27-15-16, and will deepen from 2,258 feet; swabbing No. 2 Hardin, Section 27-15-16, with showing of oil and with 6 feet of sand in the hole at 2,256 feet.

Pure Oil Co. has derrick up for No. 2 Cunningham, Section 30-15-15; J. D. Reynolds set 6-inch casing at 2,265 feet in No. 5 Ward, Section 25-15-17; Riggs and others rigging up No. 1 Hildreth, Section 22-15-17.

J. S. Smith set 10-inch casing at 52 feet in No. 1-C Shirley, Section 35-15-17, and set 6-inch casing at 1,850 feet in the same well.

Sun Oil Co. is waiting on standard rig with 8 feet of sand and 1,000 feet of oil in the hole at 2,257 feet in No. 4 Hardin, Section 27-15-16; set 8-inch casing at 1,924 feet in No. 1 Snyder, Section 34-15-15.

The Texas Co. set 10-inch casing at 57 feet in No. 8 Berry, Section 33-15-15; set 6-inch casing at 1,909 feet in No. 4 Johnson, Section 34-15-15; derrick up for No. 2 Neely, Section 27-15-16; arranging to test 40 feet of sand at 2,356 feet in No. 6 Reynolds, Section 23-15-17; rigging up Nos. 5, 6 and 7 Solmson, Section 32-15-16.

Timberlake and others set 10-inch casing at 48 feet in No. 2 Green, Section 23-15-17; drilling No. 3 Green, same section at 1,900 feet; Sid Umsted is drilling shale at 2,184 feet in No. 1 Jones, Section 26-14-17; Unity Petroleum Co. drilling No. 3 Beery, Section 33-15-15, at 1,100 feet.

White and others set 10-inch casing at 80 feet in No. 1 Riley, Section 23-15-17; Whitaker and others drilling No. 2 Green, Section 23-15-17, at 2,000 feet; Whittiken and others derrick up for No. 6 Anderson, Section 23-15-17, and drilling No. 2 Hodges, Section 26-15-17, at 2,140 feet.

Cotton Valley, Webster Parish

A noticeable increase in drilling activity features the operations in this district, at the close of the week, drilling wells numbering 36, with 10 rigging up to drill, 12 derrick and 8 new locations.

Alabama Petroleum Co. is drilling in chalk rock at 2,300 feet in No. 1 Coffee, Section 19-21-9, and set 10-inch casing at 450 feet in No. 3-B Pardee, Section 24-21-10.

Crusader Oil Producing Co. has 10 rigs running on the Hope estate in Sections 13, 24 and 25-21-10, with locations made for five more.

M. J. Derryberry is drilling at 2,200 feet in No. 1-A Smith. Section 29-21-10; Fortuna Oil Co. has made a location for No. 3 W. Cox and is rigging up to drill No. 1 R. R. Cox, Section 15-21-10; Humble Oil & Refining Co. is drilling at 1,000 feet in No. 13-B Bodcau, Section 28-21-10; at 700 feet in No. 14-B, Section 13-21-10; set 10-inch at 530 feet in No. 15-A; rigging up to drill No. 17-B in Section 28-21-10; derrick up for No. 16-B Bodcau, Section 24-21-10; is arranging to pump No. 2 Gray, Section 26-21-10 and Nos. 3 and 4, same section are rigging up to drill.

Kennedy and others are rigging up to drill No. 1 Ambrose, Section 19-20-10, 5 miles south and a little west of production.

Louisiana Oil Refining Corp. is arranging to pump No. 1 Bodcau and rigging up to drill No. 2, Section 13-21-10; set 6-inch at 2,537 feet in No. 2 Gray, and drilling at 750 feet in No. 3 and at 1,200 feet in No. 4, Section 28-21-10.

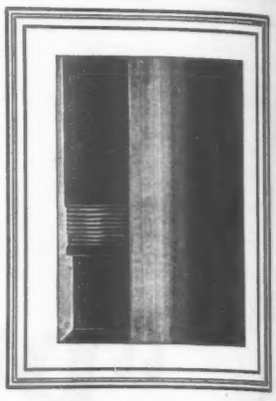
Moffatt & Murphy tested salt water at 2,586 feet in No. 1 Miller, Section 28-21-10, and will plug back to 1,200 feet where they had 11 feet of promising oil sand. Ohio Oil Co. is arranging to pump No. 17 Bodcau, and rigging up to drill No. 18, Section 13-21-10; set 6-inch at 2,515 feet in No. 19 and rigging up to drill No. 20, Section 15-21-10; drilling at 2,035 feet in No. 21 and at 1,615 feet in No. 22, Section 27-21-10, and drilling Nos. 23, 24 and 25, Section 28-21-10; No. 1 Cox in Section 15-21-10, set 10-inch at 440 feet and derrick is up for No. 2, same section; Nos. 1 and 2 Gray, Section 27-21-10, are arranging to pump and in Section 26 derricks are up for Nos. 3 and 4 Gray and locations made for Nos. 5, 6 and 7. Derrick is up for No. 3 B. Sidney, Section 16-21-10.

Palmer & Blount are drilling at 550 feet in No. 1 Mason, Section 20-18-10.

Palmer Corp. is drilling in gumbo at 1,300 feet in No. 2 Tillman, Section 28-21-10; and Ruston Drilling Syndicate set 6-inch casing at 2,474 feet in No. 1 Cox, Section 15-21-10.

Springhill District, Webster Parish

In the Springhill district, north end of Webster Parish, there is steadily increasing activity. An important gas field has been developed in this district, with promising indications of oil.



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Fortuna Oil Co. is drilling at 2,600 feet in No. 1 Nickerson, Section 33-23-10, and set 6-inch casing at 2,563 feet in No. 1 Pine Woods Lumber Co., Section 27-23-10.

Louisiana Oil Refining Corp. is bailing 6-inch for a test at 2,795 feet in its deep well on the Armor lease, Section 21-23-9.

Oil Fields Gas Co. set 12½-inch casing at 200 feet in No. 2 Jordan-Young, Section 34-23-10, and at 208 feet in No. 1 Simpson, Section 3-22-10.

Simms Oil Co. set 6-inch at 2,668 feet in No. 1 Waller, Section 28-23-10, and The Texas Co. is drilling at 2,010 feet in No. 1 Lewis, Section 25-23-10.

Bienville Parish

Roxana Petroleum Corp. tested salt water at 2,780 feet in its deep test on the Bryan lease in Section 30-17-6, 8 miles south of Gibsland.

Bossier Parish

In the Elm Grove district, Palmer Corp. is drilling at 1,520 feet in No. 8-B Hodges, Section 25-16-12.

Thigpen & Herold are setting liner to test 2 feet of sand at 1,975 feet in No. 1 Bernstein, Section 11-20-13, 4 miles northeast of Benton.

In the north end of the parish, G. W. Weatherbee bailed dry at 2,668 feet in No. 1 Holland, Section 4-22-11, and is arranging to drill deeper.

Bellevue Field, Bossier Parish

Dixie Oil Co. is rigging up to drill No. 1 Johnson, Section 34-19-11; Humble Oil & Refining Co. is drilling at 80 feet in No. 20-A fee, Section 10-19-11; Osborne and others are rigging up to drill No. 2 McDade, Section 32-19-11, and G. W. Weatherbee is rigging up to drill No. 5 Bliss & Weatherbee fee, Section 23-19-11.

Caddo Parish

Dixie Oil Co. is drilling at 3,488 feet in its deep test on the Noel lease, Section 24-21-15; has gone back into No. 53 Robertshaw, standing at 3,100 feet, and arranging to drill deeper, and is drilling at 1,480 feet in No. 65 Robertshaw, Section 13-21-15, all in the Pine Island district.

Other wells drilling in the Pine Island district are the Fortuna Oil Co.'s No. 14 Doan-Thigpen, Section 5-20-15, drilling at 910 feet, No. 2 Levee Board, Section 8-20-15, rigging up to drill, and No. 10 Robertshaw, Section 23-21-15, fishing at 3,314 feet; Ohio Oil Co.'s No. 16 E. K. Smith, Section 7-21-14, set 10 inch at 90 feet, and The Texas Co.'s No. 3 Caddo Mineral Land Co., Section 23-21-15, which is milling out collapsed 6-inch casing at 3,009 feet.

Between Shreveport and the Waskom and Bethany gas fields, Flournoy, trustee, set 10-inch at 200 feet in No. 1 Simpson, Section 8-16-15; Ford and others tested salt water at 1,915 feet in No. 1 Agurs, Section 14-17-16; Proven Production Co. is setting 4½-inch casing to test at 2,465 feet in No. 1 Agurs, Section 6-16-16.

Glassell & Myers set 8½-inch at 1,870 feet in their second well on the Florsheim lease, Section 9-17-16, and A. C. Scott and others set 8-inch at 565 feet in No. 1 Stringfellow, Section 19-17-16.

Fortuna Oil Co. is rigging up to drill No. 1 Mitchell, Section 17-18-16, 4 miles west of Cross Lake, and Haynes Brothers tested dry at 2,313 feet in No. 1 Louisiana Live Stock & Planting Co., in Section 8-19-16, 6 miles southwest of Mooringsport.

In the west end of the old Caddo Field, the Standard Oil Co. is drilling at 2,080 feet in No. 170 Stiles, Section 27-21-16, and in the south end of the Elm Grove gas district The Texas Co. is drilling in sand rock at 1,960 feet in No. 3 Huron and Co., Section 8-15-12.

Fortuna Oil Co. is rigging up to drill No. 2 Levee Board in Section 8-20-15; W. M. Gross and others have 1,400 feet of oil in the hole in No. 2 H. Rives, Section 5-20-16 and arranging to pump at 1,866 feet; Waterman Drilling & Development Co. is drilling at 1,255 feet in No. 1 Hunting Club, Section 17-17-16.

Caldwell Parish

Culver and others are reaming to bottom of the hole at 3,200 feet in No. 1 fee, Section 21-14-4, 5 miles north of Columbia.

Claiborne Parish

Claiborne-Lincoln Syndicate is bailing No. 3 Fields, Section 22-19-5, showing a little salt water at 2,236 feet. The test is 5 miles northeast of Arcadia.

Clark & Melat are drilling at 1,900 feet in No. 1 Heard, Section 5-21-6, 4 miles northeast of Homer.

J. P. Evans and others tested salt water at 2,613 feet in No. 1 Taylor, Section 5-19-5, and the well will probably be abandoned. The Taylor test is 12 miles southeast of Homer.

Triangle Drilling Co. has derrick up for No. 1 J. H. Cox in Section 7-19-5, and Woodley & Collins are rigging up to drill No. 1 Oakes in Section 8-20-5, 10 miles southeast of Homer.

De Soto Parish

Greyhound Syndicate is drilling at 3,010 feet in No. 1 Pollock, Section 36-11-14, 4 miles south of the old Spider district.

The Texas Co. is drilling in chalk rock at 1,000 feet in No. 30 Christine, Section 6-12-11, in the east end of the Naborton district.

Jackson Parish

Big Chief Oil Co. is building derrick for a test on the J. H. Rhymes land, Section 13-14-4w, half way between Ruston and Winnfield.

La Salle Parish

Bur Ban Oil Co. is arranging to set 6-inch casing at 2,090 feet in No. 2 Urania, Section 21-11-2e; Gulf Refining Co. is drilling at 1,750 feet in No. 1-A Urania, Section 22-11-2e, and Urania Petroleum Co. is down 150 feet in No. 6 Urania, Section 18-10-2e.

Morehouse Parish

The Natural Gas Producing Co. is drilling at 1,730 feet in No. 15 Crossett, Section 20-22-5.

Ouachita Parish

Dickson & Frue are drilling at 2,540 feet in No. 1 Goodwin, Section 24-18-2e; Montgomery and others are drilling at 2,055 feet in No. 1 McHenry, Section 12-19-4; Southern Carbon Co. set 6-inch casing at 2,181 feet in No. 44 fee, Section 7-19-5, and drilling at 1,935 feet in No. 45 fee, Section 11-19-4; Standard Carbon Co. set 6-inch casing at 2,133 feet in No. 1 Swartz, Section 6-19-5, and J. P. White and others are drilling at 1,710 feet in No. 1 Jones, Section 6-16-5.

Sabine Parish

L. M. Emlet is drilling at 1,400 feet in No. 5 Bowman Lumber Co., Section 9-7-12, 3 miles southeast of Zwalle, and Flo-Ark Oil Co. is rigging up to drill No. 1 E. A. Walker, Section 8-5-12, in the south end of the parish.

Union Parish

Simms Oil Co. is drilling at 2,440 feet in No. 1 James, Section 16-22-5w, 8 miles south of Junction City.

Winn Parish

Galloway & Arrendale are drilling at 2,110 feet in No. 1 McCarty, Section 5-12-1w, 10 miles northeast of Winnfield.

Columbia County, Arkansas

Magnolia Petroleum Co. is arranging to make a test at 2,257 feet in No. 1 Phil Lindsay, Section 30-18-19.

Magnolia Petroleum Co. is drilling at 3,245 feet in No. 2 Watson, Section 36-15-20.

Wingfield & Mitchell are drilling at 990 feet in No. 1 Boucau, Section 4-20-21.

Hempstead County

Grassy Lake Oil Association is drilling at 1,325 feet in No. 1 Gun Club, Section 27-12-27.

LaFayette County

Kensaw Petroleum Co. is setting 6-inch to test 1 foot of sand at 1,878 feet in No. 2 Red River Land Co., Section 3-20-24.

Nevada County

Ames and others are drilling at 550 feet in No. 3 Womack, Section 10-14-21, and in same section Autry Oil Co. set 6-inch at 1,186 feet in No. 5 Womack. Greason and others are arranging to pump No. 1 McKinney at 1,250 feet and have derrick up for No. 2; Smitherman-McDonald are arranging to pump No. 3 Drake; derrick up for No. 6 McKinney and drilling plug in 6-inch at 1,214 feet in No. 7 McKinney; and Zing and others set 6-inch casing at 1,160 feet in No. 1 McKinney, Section 10-14-21.

Humble Oil & Refining Co. is drilling at 1,300 feet in No. 1 J. D. Pelt, Section 8-15-22.

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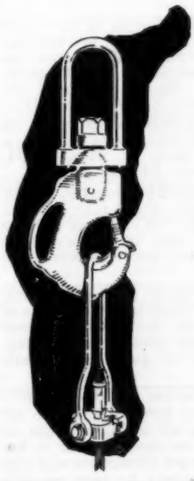

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Fee, 1,100 acres Southwest Archer County. Several hundred acres in cultivation, a well will be drilled on this place in spring; price $40 per acre.

Fee, 640 acres 4 miles of Wichita Falls, had a small well on it; ideal place; bargain $45,000.00 cash.

Fee, 3,000 acres Southeast part Archer County, extraordinary price of $22.50 per acre.

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Owner of 20,000 acres scattered in very desirable counties will assign one-half of acreage for payment of rentals on the other half. Rental date March 28, and rate is 16 cents per acre. Here is a safe place to make money. Box A-610, The Oil and Gas Journal, Tulsa, Okla.

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LIBERTY COUNTY, TEXAS—Hull Oil Field, acreage for lease in southwest part of Field, one-half mile from production. Owner, Box 27, South Orange, New Jersey.

SAN JUAN BASIN, New Mexico, 2,500 acres in this high gravity shallow well field, for sale or lease. Edward C. Hall. P. O. Box 37. Sugar Land, Tex.

SOUTHEAST NEW MEXICO

Can furnish practically proven leases in Artesia Field, Eddy County. Also other tracts in Eddy, Chaves and Lea Counties. Particulars on request.

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Account owner's serious injury he is compelled to sell one-sixteenth interest in well now drilling at seventeen hundred feet and with two good showings already, and six hundred forty acres leased close by. Location on excellent structure, and map furnished on request. Well in Ellis County, Kansas. Also have fine drilling blocks on wonderful structures. Write or wire W. J. Madden. Hays, Kans.

JUDIO DOME

The largest dome that has been mapped in the Cumberland County (Kentucky) Field. Have five leases, will sell three, will send map to buyers. Richardson & Goff, Columbia, Kentucky.

FOR SALE—Oil Lease, 700 acres and production. Have 16 wells pumping, good equipment; good 27 Star Machine and tools. Equipment for 6 new wells; good chance for Wilcox test; have never been tested. Present owner not financially able to develop. Price $27,500, $10,000 cash and arrange balance. Box A-650, The Oil and Gas Journal, Tulsa Okla.

LEASES FOR SALE

On structure being drilled by Judge F. C. Fullerton and Associates of Miami, Okla., in Panola County, Texas, at $10.00 per acre, regular 88-forms. They had showings of gas and oil in two sands; now 2,400 feet; going to Woodbine sand where they expect oil. The well is fully financed. Send cash with orders. Address Bowen, Box 116, Carthage, Tex.

FOR SALE

Three-year, 88-form lease on 160 acres in Medina County, Texas. Mid-Kansas Oil & Gas Co. moving in materials for deep test, 3,630 feet south. Will sell all or half of it. Priced to sell. 50-cent rental due Feb. 14, 1926. A. V. Shaw, Dunlay, Tex.

LEASES—PRODUCTION

FOR SALE—10,000-acre lease in Allen and Monroe Counties, near Sulphur Creek, some in Clay County, Tennessee; ⅛ royalty, cheap rental, due in 1-2 years; shallow drilling; price 25c to 75c per acre. William S. Silvers, Marion, Ind.

METCALF COUNTY oil leases, vicinity production; from 50 cents to $5 per acre, which pays rental for one year. Will advance in value as drilling goes on. Box 184, Edmonton, Ky.

OIL LEASE—827 acres, five-year 88 form Live Oak County, Texas. Close to production. Drilling on three sides on structure. Price for quick sale $5.00 per acre. For map and full particulars address Gulf Leasing Co., 525 Brady Bldg., San Antonio, Tex.

LEASES and royalties in Ouachita County, Arkansas, from $5 per acre up. P. B. Orr, P. O. Box 303, Camden, Ark.

OIL AND GAS LEASES
On Marathon Fold

18,000 acres, University permits, dated October 1, 1924, joining University permits of Sun Oil Co. and Gulf Production Co. Transcontinental now drilling and three more wells to start. Price reasonable.

20,000 acres 10-year leases, Crockett County; large and small blocks adjoining best companies.

5,000 acres, 10-year leases; close to drilling wells; Upton County.

1,920 acres University permits, Reagan County; close to Big Lake Oil Co., and Texon Oil & Land Co. producing wells. Want drilling contract.

133,000 acres Pecos County, near blocks of Arkansas Fuel and Pittsburgh operators. Low in price. Will sell in blocks or arrange for wells. Will allow time for geological inspection.

3,000 acres 10-year lease. Upton County; near drilling well and joining leading company holdings. Prices and maps on request.

C. W. WEBSTER
17th Floor W. T. Waggoner Bldg.
Fort Worth, Texas
Reference: R. G. Dun & Co.

FOR LEASE—563 acres in six tracts about 5 miles northeast of Sulphur Springs, Texas. Surrounded by or adjoining large lease areas supposedly on Balcones Fault. $5 an acre. B. O. Mahaffey, 506 Olive St., St. Louis, Mo.

FOR OIL LEASES and royalties in Seminole and Pottawatomie Counties, Oklahoma, call, write or wire, I. H. Townsend, Konowa, Oklahoma.

HUGHES COUNTY Royalty. Will sell half the royalty and 5-year lease on 80 acres in 32-6-10. No mortgage or lease on land. Make offer to L. MacKechnie, 3008 Knox Ave., South, Minneapolis, Minn.

LEASEMAN wants parties to share expenses taking leases in Oklahoma and Texas. Act quick, get leases without rentals, near wells drilling this spring. Box A-651, The Oil and Gas Journal, Tulsa, Okla.

OIL MAN, Farmer or Speculator—Improved Missouri farms for sale in oil survey containing oil seepages; right in oil development; indications point to big new field. Better get particulars and buy now while cheap; may be very valuable later. Safe investment. Miller Brothers, 143 Allen Ave., Findlay, Ohio.

10,000 ACRES

For drilling contract, New Mexico, San Miguel County. Excellent geology, depth 2,500 feet. Want driller financially able to put down test on equitable basis. C. W. Mack, 224 First Natl. Bank Bldg., Denver, Colo.

LEASES—PRODUCTION

FOR SALE—Osage County oil mining lease Township 20, Range 12. Box A-626, The Oil and Gas Journal, Tulsa, Okla.

SHELBY OIL FIELD — Royalties, leases from 40 to 1,000 acres, and other investments. Shelby needs more business houses, more capital and more labor. Send 50 cents for reliable report. Shelby oil field has 219 producing oil wells. Address The Stevens Syndicate, Shelby, Mont.

FOR SALE—One-half oil and gas royalties, 320 acres Sumner County, Kans. Direct line between Dilworth and Rainbow fields. Write for particulars. George G. Perkins, Paris, Ill.

FOR SALE—Oil wells, deep, shallow. Fine for promoters. (Casing in wells, Star rig in Kansas). Want contract for deep rotary test. Frank Hotel, Norphlet, Ark.

FOR PANHANDLE oil leases and drilling contracts write Dr. W. R. German. Canadian, Texas.

NEW MEXICO State oil leases, 40-acre tracts, immediate sale. Closing out holdings in Chaves, Union and Roosevelt Counties. C. A. Wicklund, Independence, Ky.

ACREAGE and drilling blocks in Kansas and Colorado. Communicate with E. E. Fackler, Manchester, Kans.

PROVEN and semiproven leases and royalties in the Ouachita and Nevada County, Arkansas, oil fields for sale. Send me your orders before prices advance with crude prices. W. M. Worthen, Camden, Ark.

COKE COUNTY, Texas, is on the Marathon Fold, two wells drilling in county. For cheap leases write J. L. Tubb & Co., Robert Lee, Texas.

WILL GIVE 10,000 acres for a well drilled to three thousand feet in prospective oil and gas territory. Address G. Lucas, 617 Edwards St., Shreveport, La.

FOR SALE—A lot of leases in the Trenton Rock Field of Ohio from $1.50 to $2.50 per acre with new production around them. Also producing properties. Also a fine lot of pipe in Oklahoma. U. M. Shappell, Lima, Ohio.

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NEW MEXICO Drilling Block. 2,500 acres solid in Bloomfield district near 82 gravity oil. Want responsible people to develop. Box A-644, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE—At bargain prices, oil and gas leases, production and royalties in the Kentucky shallow fields. For full particulars and maps address W. P. Harley, Bowling Green, Ky.

HAVE SEVERAL thousand acres on and near only well defined anticline in Michigan, Dundee and Trenton. Dundee is oil producing in Michigan and Ontario, short drive, shallow wells 1,000 to 1,140 feet. Big market for crude or gas. Will give half interest in block of 5,000 acres for test well. Box 214, Portland, Ind.

BIG LAKE FIELD, Reagan County, Texas. Twelve square miles proven territory. Will soon double. Six wells drilling southeast structure between Cosden and producing area. Eighty acres in center triangle formed by three drilling wells, $25 an acre. Need cash for development. Oil showing southeast will jump prices several hundred dollars acre. Write, small accurate map. W. R. Apperman, Big Lake, Texas.

LEASES—PRODUCTION

FOR SALE

A few more leases and royalty in Scroggins territory. Degenther test set 8¼" casing 1,850 feet. Will test out. No more leases close in for sale. If you want one, hurry.

Also 5,000 acres solid 5 miles southwest of this well for $1 per acre and drilling contract. Good geology on it. Write R. W. Dykes, Winnsboro, Tex.

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P. M. CHILDRESS

Alice, Tex.

COOPERATIVE RELATIONSHIP NEEDED IN SALES AND CREDIT DEPARTMENTS

By F. L. Miller

*Vice President Miller Petroleum Co., Kansas City, Mo.**

In the deflation of 1921 sales managers were meeting difficulties they had never before experienced. In addition to the worries ordinarily expected when markets are dull, they were greatly troubled by the authority already given and now exercised by the credit men concerning whom they might sell and on what terms a sale could be made. Heretofore, they had felt free to dictate such terms themselves and now to be confronted by a department, in which they had little confidence and with whom they had had little association, dictating almost their very sales policy and at a time when sales were hard to make was almost more than the average sales manager could bear.

Between these two opposing factors there was anything but cooperation. The sales department felt this new factor was attempting to come between him and his best customers by imposing terms that were unreasonable. The credit man, had no other feeling than they were being ignored; were expected to do the impossible in making collections and meeting other requirements heaped upon them and no help from the sales department when sales were made. Yet the average sales manager was ever ready to pass the buck when the credit man had erred in extending credit and found a great deal of solace in the fact that in such instances he did not bear the responsibility of having sold a poor account.

It has taken a long time to clear up entirely this situation between the two factions but I believe now the sales department sees the error of its ways. It now appreciates the real importance of a competent credit department on whom they can place the responsibility of making terms and subsequently collections. They know now that the credit man was right when he said "no sale is complete until the goods have reached destination, have been accepted and the money is in the bank," for until this is accomplished many things can happen.

The sales manager further finds it is much easier to tell an undesirable credit risk he will be glad to make shipment if the credit department approves. He finds a good credit risk is actually easier to sell than a poor one for a man who is undependable insofar as paying his bills is concerned will generally prove a sharp trader—the kind that takes advantage of the seller after goods have reached destination and cannot be diverted.

Differing Functions

On the other hand, so long as things run smoothly the sales department is the chief point of contact between the supplier and the purchaser. Seldom is there any exchange of correspondence with any other department so long as goods are furnished promptly when ordered, price is satisfactory and the buyer meets his bill at maturity or in accordance with agreement.

If any change is necessary in terms or conditions it is much easier for the sales department, which has been in constant touch with the customer, to explain these necessary changes than it is for the credit department to break in on these relations and impose new terms or conditions direct.

It is well for the sales manager to be fully familiar with general credit conditions surrounding any customer with whom he is dealing and this information must come from the credit department. He will not secure it himself for he considers it an unpleasant duty to ask anyone concerning their financial affairs.

It is just as necessary for the credit manager to familiarize himself with matters pertaining to sales. The sales manager has no bed of roses. There are times, to be sure, when a seller's market prevails and sales are easily made but even then be ofttimes has difficulties with his deliveries; when conditions are depressed, as has been the case a considerable portion of the past two years, he is constantly confronted with an unceasing supply of finished merchandise that must be moved with regularity or otherwise cash receipts diminish and the traffic department raise their protest because cars are not being utilized.

Sales Association

While there has been no recent attempt to form the sales managers into a group or association, I would recommend that such a movement be given careful consideration. In effecting such an organization it would be entirely without any idea of considering prices in any phase for even though it was legal to do so, I think matters pertaining to prices are of the least importance of any that could be discussed. They would have plenty to do were they to freely discuss ethics pertaining to sales and to improve those ethics among their membership; to give proper consideration to freight differentials and to work towards more thoroughly covering the territory already at our command with Mid-Continent products and acquiring such additional territory as might be possible from time to time through changed conditions of freight rates. The members of this group should be limited absolutely to the official sales managers of members of the Western Petroleum Refiners Association or, in cases of companies having no designated sales manager, such concerns would be entitled to membership through their official in active charge of sales.

I would also suggest that at least once each year the credit managers be invited to a joint meeting with the refinery sales managers—I say invited because you realize that the credit managers are not affiliated with any association and must therefore be approached in a different manner than one of our own members. Much good can be accomplished by airing our difficulties in open meeting and this should be an annual affair.

Hedged by Restrictions

Touching on matters pertaining to sales and distribution of our products generally, I wonder if you have seriously considered how little we control our products after they are manufactured? Bulletin No. 323-A, issued by the Bureau of Standards, informs us the distillation tests must be made at a certain rate and without cotton on the thermometer bulb. It further designates that the proper name for a competitive grade of gasoline is now U. S. Motor.

The Bureau of Inflammables sees that cars are loaded only to shell capacity, irrespective of temperature, when they contain an inflammable product. Trade journals set the price, and it is alleged, the brokers—or marketers, as the choose to be called—are very definite factors in furnishing market information. If an outage occurs at destination caused through our inability to load to shell capacity, we must pay frieght on this outage.

Governmental regulations are made ostensibly for the purpose of designating grade of material used by the Government. The actual volume of all products sold to the Government as compared with a total output is negligible, yet such recommendations have a far reaching effect. States adopt these specifications. Exporters do the same, and through our own negligence we permit nearly every buyer to impose the same restrictions on everything we ship.

I can think of no manufacturer that is so hedged about by outside influence and regulations as ours. Why should we sit idly by and reduce our yields because the Bureau of Standards takes the cotton off the thermometer bulb on Government purchases? Why should we adopt the name "U. S. Motor" or U. S. Navy" as this governmental whim changes? Is there any reason that we should adopt or even accept the specifications promulgated by such an agency and then supply our customers with a much better product than is specified? We all know a gasoline with 100 to 110 initial will give better satisfaction than one with an initial of 137. We furthermore are certain the trade would much prefer a gasoline having 25 or better color than 16 color as indicated in the specifications referred to. I believe a properly finished 450 end point gasoline, with a low initial, and 21 or better color will give better satisfaction than that specfied as "U. S. Motor."

In addition to all of the foregoing rules and regulations promulgated by outside agencies, we are now confronted with a new coefficient of expansion that by actual figures will materially reduce the net back to the refiner on his lighter products. Another thing that is generally asked and in many instances granted by sales managers is the privilege of the buyer routing his shipments from the refinery. How can we adequately support our traffic managers in their demand for recognition before the railroads—how can we expect them properly to equalize mileage and handle our equipment advantageously if the sales department permits the buyer the privilege of routing the shipment as he sees fit?

In my opinion the sales department has no more right to route shipments than they have to make terms. These are prerogatives of traffic and credit departments and should be recognized.

*Delivered before Western Petroleum Refiners' Association Convention, Kansas City, Mo.

Late Fields

(Continued from Page 29)

in the whole territory, will account for probably 40 per cent of all locations made during the week.

There seems to be a revival of activity in Eastland County, a total of 16 new locations being reported, pretty well scattered over the county, an indication that prospective higher prices for crude oil will revive operations in the older and well known producing areas.

Recent developments in the Panhandle seem to have stimulated activity there as Carson County reports five new locations. Wichita County reported 14 new locations, Stephens County 3 and Mitchell County 5. Wilbarger County had 8. Other locations follow: Wheeler County 1, Baylor County 3, Clay County 2, Grayson County 1, Scurry County 1, Shackelford County 1, Palo Pinto County 1, Brown County 2, Reagan County 4 and Throckmorton County 1.

Mitchell County with a daily production above 1,500 bbls. is promised a rather extensive drilling program right away. The California Co. has recently made two locations, spudded in one well and is moving in timbers for a rig. The Northwest Co. has just spudded in No. 2 Moore in the northwest part of the county and a rig is being built for Sloan Oil Co.'s No. 6 Smartt. Twenty-five miles southwest of the town of Colorado and in rank wildcat territory rig is going up for a test on the Scott land by Sloan and others. It is in Section 15, Block 19 of the Lavaca Navigation Co.

In Reagan Co. the Texon Oil & Land Co.'s No. 4 Group 1, University, looks only a very small producer. It is a quarter of a mile southeast of other production. It was shot at around 3,127 feet and made a comparatively small response, filling about 2,000 feet with fluid.

Operators and lease owners in Throckmorton County are very much elated over the bringing in of a good gasser by Larkin and others 12 miles south of the town of Throckmorton on the Richards farm in the A. J. Morgan survey. This is the No. 2 Richards which got the gas sand at around 1,265 feet. The flow of gas is estimated at close to 20,000,000 feet daily.

There is a somewhat general interest in Cooks County, where the Big Injun Oil & Gas Co. last fall got a good showing of oil at around 3,527 feet. An offset is being drilled by Leonard and others and has reached a depth of 1,500 feet. Clopton and others have rig timbers and fuel tanks on their location near the town of Orlena in the northeastern part of the county.

Following is a list of new producers not yet completed:

Wichita County: Shappell Oil Co.'s No. 16 Jackson, swabbing 300 bbls. at 1,795 to 1,799 feet; Pois and others' No. 10 Allen & Kemp, swabbing 125 bbls. from the sand at 1,626 feet.

Archer County: Texhoma Oil & Refining Co.'s No. 1 Chilson, 40 bbls. from sand at 1,806 to 1,810 feet; Carter and others' No. 20-E White, 30 bbls. from 4 feet of sand topped at 1,610 feet; Hobbs and others' No. 5 Wilson, 10 bbls. of oil and 30 bbls. of salt water at 1,582 to 1,584 feet; Oil Investment Co.'s No. 6 fee, 60 bbls. at 1,190 to 1,193 feet; Stidham and others' No. 13 White, swabbing 200 bbls. in 13 hours from 5 feet of sand topped at 1,609 feet.

OKLAHOMA

The Blackwell Oil & Gas Co.'s No. 1 Kaney, NW cor. Section 7-26-1w, Kay County, was making 30,000,000 feet of gas from sand at 880-903 feet.

The Mid-Continent Petroleum Corp.'s (Cosden) No. 6, NW cor. SE SE, Section 15-10-8, in the Cromwell Field, Seminole County, was making 1,000 bbls. from sand at 3,505-45 feet.

The Transcontinental Oil Co.'s No. 1 Bruner, C NW NE NW, Section 25-10-8, Okfuskee County, topped sand at 3,285 feet, and had a 10-bbl. show at 3,290 feet.

Flynn, Morgan & Shaffer's No. 1 School land, SW cor. NW SE, Section 16-17-4, Payne County, had 2,000,000 feet of gas at 3,756-58 feet.

The Marland Oil Co.'s No. 1 Fitzgerald, C SE SW NE, Section 1-26-2w, in the Hubbard Pool, was making 470 bbls. with the water decreasing.

The Gypsy Oil Co.'s No. 93 Shawver, C SW SW NW, Section 2-24-1w, in the Tonkawa Field, was making 1,200 bbls. from sand at 4,222-62 feet. The Comar Oil Co.'s No. 2-W Beverlin, C SW SE NW, Section 34-25-1w, one location east of No. 7-W, which has been in for some weeks, found no production in the first sand, but got oil at 4,230 feet, with the top of the sand at 4,185 feet, and at a total depth of 4,245 feet was making 4,250 bbls.

KANSAS

Connell, Mathews & Ralston's No. 1 King, NE cor. NW SW, Section 17-24-4, Butler County, found chat at 2,542 feet, and at 2 feet in filled up with high gravity oil with no water.

In Wooden County, Larison and others' No. 1 Black, SW cor. SE SE, Section 14-25-13, was making 75 bbls. and 3,000,000 feet of gas from the Bartlesville at 1,376-1,414 feet.

Rhodes & Able's No. 1 Blackwell, SE cor. NE, Section 16-24-13, Greenwood County, topped lime at 1,616 feet, and got oil at 1,627 feet. There were 200 feet of oil in the hole at a total depth of 1,637 feet, and the 6-inch casing was being run.

TRACES OF OIL IN TUNIS REPORTED BY FRENCH

It is reported that the Societie Franco Africiane des Petroles, which holds oil prospecting rights over an area of 2,800 hectares in the region of Medjaz-el-Bab in Tunis has carried out a good deal of exploratory work and geological research in the neighborhood of Teboussouk, using the "radiotelluric" apparatus of MM. Vengerhoets and Lechau, which is reported to have been the means of locating the recently discovered pool in the Hanover province of Germany.

The well is being drilled with a Canadian-Polish rig of the type used in the Boryslaw Field under the direction of a Galician engineer. Preparations have been made to drill 1,000 metres. The strata penetrated to 500 metres are said to have yielded indications of oil in the shape of gas, bituminous clays, traces of oil and schists impregnated with ozokerite. The Corps des Mines Tunisien is of opinion the Triassic formation will be reached at about 600 metres where it is thought there is a chance of finding oil.

Oil Securities Stronger Toward Close

Transactions Heavy, Indicating Continued Interest and Some Accumulation. Stimulated By Improvement in Oil Business

By N. O. Fanning
Room 543, No. 30 Church St., New York

NEW YORK, Feb. 28.—During the past week oil securities were irregular with a stronger tone developing at the close. Transections in the group continued heavy, indicating continued interest and in some cases accumulation. The outstanding development of interest was the raising of the dividend on Pan-American Petroleum & Transport stocks from $1 to $1.50 per share quarterly. These issues are now considered on a 12 per cent basis, against 8 per cent formerly, the par value being $50.

Stimulated by this favorable happening and the continued improvement in the oil business, oil stocks moved up with Standard Oil of New Jersey common, Standard of California, Pacific Oil, Tide Water Oil and Marland Oil prominent. Although crude oil production has increased slightly, this fact is not regarded as indicating a definite upward trend.

Another favorable development during the week was the action of the directors of Union Oil Associates, who declared an 80 per cent stock dividend, payable March 23 to holders of record March 2. The Union Oil Associates, which is a holding company, was organized several years ago by prominent Californians, all of whom were large stockholders in the Union Oil Co. of California, to hold controlling stock in the latter company in order to prevent foreign interests from gaining control of the organization. At the time of the formation of Union Oil Associates it was reported that Royal Dutch-Shell combine was endeavoring to acquire control of the California property.

Borne Scrymser Co.

Borne Scrymser Co. has declared an extra dividend of 2 per cent in addition to the regular semiannual dividend of 4 per cent, both payable April 15 to stockholders of record March 21. At this time last year, the company also declared an extra dividend of 2 per cent.

Statement of the Borne Scrymser Co. as of December 31, 1924, shows total assets and liabilities of $1,682,316, cash of $98,765 and surplus of $539,721. The balance sheet of the company is as follows:

Assets: Real estate, plant and equipment, less depreciation, $365,713; inventory, $391,726; notes and accounts receivable, $226,451; cash, $98,765; other investments, $599,211; prepaid items, $240; total, $1,682,316.

Liabilities: Capital stock, $1,000,000; accounts payable, $63,666; accrued expenses, $1,391; reserves, $77,538; surplus, $539,721; total, $1,682,316.

Swan-Finch Oil Co.

The Swan-Finch Oil Co. reports as of June 30, 1924, total assets of $1,627,153, against $1,671,365 on September 30,1923, the last previous statement issued, and profit and loss surplus of $347,090, against a deficit of $490,103. The improved showing is the result of the capital readjustment effected during 1924.

The balance sheet of the Swan-Finch Co. as of June 30, 1924, compares with that of September 30, 1923, as follows:

Assets	June 30, 1924	Sept. 30, 1923
Fixed assets	$ 760,576	$ 721,494
Investments	128,092	87,047
Current assets	719,623	846,028
Deferred assets	18,862	16,796
Total	$1,627,153	$1,671,365
Liabilities		
Preferred stock	$ 150,500	$ 150,500
Common stock	*861,466	†1,722,931
Current liabilities	50,215	107,471
Reserves	217,882	180,566
Surplus	347,090	.....
Deficit	.....	490,103
Total	$1,627,153	$1,671,365

*Par value, $25. †Par value, $100.

Mid-Continent Petroleum Corp.

Stockholders of Cosden & Co. at a special meeting approved the change in the corporate name to Mid-Continent Petroleum Corp.

The statement of Cosden & Co. and subsidiaries for the nine months ended September 30, 1924, shows net profit of 1,434,811 after interest, depreciation, depletion, etc.

The consolidated income account of Cosden & Co. for the nine months follows:

Gross income	*$29,015,343	
Expenses	20,138,246	
Interest, etc.	1,459,313	
Depreciation, depletion, etc.	5,982,973	
Net profit	$ 1,434,811	
Dividends	360,064	
Surplus	$ 1,074,747	

*Includes $1,009,132 profit from sale of securities.

Houston Oil Report

The Houston Oil Co. of Texas, reports for the year ended December 31, 1924, net profit of $1,518,792 after taxes, depreciation, depletion, etc., equivalent after preferred dividends to $3.93 per share earned on $24,968,600 common stock (par $100). This compares with $1,529,169, or $3.97 per share, in 1923.

The income account for 1924 compares with 1923 as follows:

Sales	$4,462,456	$3,852,229
Operating expenses, depreciation, etc.	2,084,850	1,627,898
Expenses, Federal taxes etc.	867,585	592,154
Depletion of oil lands	61,603	131,534
Balance	$1,448,418	$1,900,537
Other income	70,374	28,670
Net profit	$1,518,792	$1,529,169
Preferred dividends	536,850	635,450
Surplus	$ 981,942	$ 992,217

Interest collectible by the trustees on timber notes receivable and that payable by trustees of accrued dividend certificates, referred to in the deed of assignment dated September 14, 1921, is not included in the above statement.

Tide Water Oil

Tide Water Oil Co.'s stock was active and advanced to a new high mark for the year of 151½.

Union Oil of Delaware

Union Oil Co. of Delaware stock is being traded in actively on the New York Stock Exchange. It has sold from 21 cents to 40 cents per share. This company was taken over by the Shell Union Oil Corp., the Dutch-Shell subsidiary.

Lago Petroleum Co.

The Lago Petroleum Co. has made rapid strides in Venezuela since its organization. It has brought in several wells on its concession, which comprises the bed of Lake Maracaibo, which is so shallow that drilling can be done over its entire surface. It is said that the company's actual production is now 25,000 bbls. daily. It is selling 5,000 to 10,000 bbls. of oil daily to the New England Refining Co. at Fall River, Mass., and is understood to have other contracts for delivery of oil.

Pure Oil Dividends

The Pure Oil Co. has declared regular quarterly dividends on its three classes of preferred dividends, all payable April 1 to stockholders of record March 10.

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE STOCKS

Stock—	Par	‡Dividend Rate	Clos. Mar.2	Quot. Feb.20	1925 High	1925 Low	1924 High	1924 Low	1923 High	1923 Low
American Republics	..	..	56	*60	66¼	48	48	25	..	..
Associated Oil	25	6	37⅛	36¼	39½	35	34⅝	27⅝	29¼	29½
Atlantic Ref. com.	100	..	115	113	117½	95¼	140½	78½	160	98¾
Barnsdall "A"	25	..	28⅜	26⅞	28¾	21½	22¼	14	35	9⅞
California Pet. com.	25	7	29⅞	27½	30	23⅞	29	19⅞	28½	17½
Cosden & Co. com.	..	..	34⅞	33¾	35⅜	26¾	40¼	22⅝	62¼	23¾
General Am. Tank	..	†3	*53	52¼	58½	51	53	35½	71⅝	40
General Petroleum	25	8	56	54⅜	56¼	42	45	38⅝	..	..
Houston Oil	100	..	81¼	79½	85	77½	82½	61	78	40¾
Independent Oil & Gas	..	†1	30	28	30	13½	16¼	5¾	11¼	3⅜
Indian Refining	10	..	9⅜	8⅜	10⅜	5½	7	3⅜	8½	4
Louisiana Oil	50	..	21⅝	21	23¾	16¾	..	..	..	..
Maracaibo	..	..	31⅞	30⅞	35½	27½	37½	25⅜	28¼	16
Marland	..	..	43¾	42½	46¼	38¼	42	29	59⅝	18½
Mexican Seaboard	..	..	16	15½	22½	15	25⅝	14⅛	19¾	5⅝
National Supply	50	6	67½	*65	71	61⅜	72½	54	68	54
Pacific Oil	50	†2	63	60⅜	65¼	53¾	58¼	45	52½	31½
Pan American com.	20	12	82⅝	76⅛	82⅜	64	65	44¼	93½	53
Phillips Petroleum	..	†2	44	42⅜	46⅜	36⅝	42¼	28⅛	69⅝	19¾
Producers & Refiners	50	..	29⅝	*30	32⅝	27½	43½	29⅜	58¼	17½
Pure Oil com.	25	6	31½	31	33⅜	29¼	30¼	20	32	16¼
Royal Dutch, N. Y. sh.	13.40	4.42½	55⅛	55⅞	57⅜	51⅛	59½	40⅜	55⅛	40½
Shell Transport	10	3.30	*44	*43	45⅝	41	42	33	41¼	29½
Shell Union com.	..	†1	26¼	26	28⅜	22½	22½	15⅜	19¼	12⅜
Simms Petroleum	10	..	23¼	21¾	26⅜	20⅞	24	10⅜	16⅜	6½
Sinclair Consolidated com.	..	..	22½	21⅞	24⅞	17	27½	15	39⅜	16
Skelly Oil	25	..	29	28⅜	30½	24½	29	17⅛	35	12⅛
Standard of California	25	8	63⅝	64	67¼	61⅝	68½	55½	64½	47½
Standard of N. J. com.	25	4	44⅞	44½	47½	40¼	42¼	33	44¼	30⅝
Superior Oil	6	..	5½	5¼	6⅛	4⅞	8⅛	2⅝	6¾	2
The Texas Co.	25	12	47½	47⅝	49	42⅜	45⅝	37¾	52⅞	34⅝
Texas Pacific Coal & Oil	10	..	21½	19¼	23⅜	11½	15¼	8¼	24⅜	5½
Tide Water Oil	100	4	149	145	149	130	151	116¼	144	94
Transcontinental	..	..	4¾	4⅝	5½	3⅞	6¼	3¾	14½	1¼
Union Oil of California	25	7.2	41⅞	41½	43⅜	37¼	39	35½	..	..
Union Tank com.	100	5	*125	123	127⅜	118½	132⅞	94	114	106
White Eagle Oil & Refining	..	2¼	29	29	31⅜	28	29⅜	23⅛	30⅝	20½
Standard Oil Stocks										
Anglo-American Oil	£1	25	19⅝	19½	20⅜	18	18⅜	14⅜	19¾	13½
Borne Scrymser	100	12	*212	*230	240	225	264	150	153	110
Buckeye Pipe Line	50	14	66¼	*66	72	62	85½	51	94	57½
Chesebrough Mfg. Co.	25	14	*55	*56	70	48¼	52½	29¼	340	205
Crescent Pipe Line	25	..	*12½	*13½	15⅜	12⅜	20	11¼	25	15
Cumberland Pipe Line	100	12	*132	134	150	128	148	109	117	80
Eureka Pipe Line	100	8	84	*84	96	83	105	74	117¼	87
Galena Signal com.	100	4	63⅜	64⅝	68½	56⅜	69¾	52⅛	78	55
Humble Oil & Refining	25	4.8	47	47¼	47¾	42¼	43¾	36	41	28¼
Illinois Pipe Line	100	12	147½	147½	154½	127	161	123	171	115
Imperial Oil, Ltd.	..	†2	31	31⅝	34⅛	30¼	119	99	123	92
Indiana Pipe Line	50	8	79	*79	84	73	100	66	103	81
International Pet. Co.	100	x50	27½	27¼	28⅜	23	24⅜	16⅞	24⅜	13¼
Magnolia Petroleum Co.	100	4.5	146	*148	159	135	162	124	166	123
National Transit	12.50	16	22⅜	*23½	25½	22⅜	25⅞	20⅝	29	19½
New York Transit	100	3	*72	*74	75	65½	97	54½	138	70
Northern Pipe Line	100	6	84½	83½	88	80	107½	72	111	96
Ohio Oil Co.	25	8	72¼	70¾	75½	64	79½	53	85¾	48¾
Penn-Mex. Fuel	25	..	44¼	*38	44¼	35¾	45⅝	27	45	10½
Prairie Oil & Gas	25	†2	61	61¼	65½	53¾	269	193	272	152
Prairie Pipe Line	100	8	121½	121½	126	106	111	100	117	93
Solar Refining Co.	100	15	*235	*235	259	200	240	170	212	161
South Penn Oil	100	..	185	181	197	139	176	117	196	100
South West Pa. Line	100	4	*74	*74	84	76½	89	68	89	66
Southern Pipe Line	100	4	*85	87½	103	85	100	80½	116	87
Standard of Indiana	25	10	67⅛	66⅜	70	62⅛	69⅜	54⅛	69⅞	48¼
Standard of Kansas	25	..	41¼	41⅛	46	37	50½	32½	56¼	36½
Standard of Kentucky	25	16	119	117⅜	124½	117½	121¼	101	109½	76
Standard of Nebraska	100	20	262	255	270	244	262	198	280	186
Standard of New York	25	5.6	45⅞	45⅞	48⅝	44¼	48	37⅜	49⅜	35½
Standard of Ohio com.	100	10	354	*353	369	338	377½	277	320	270
Swan & Finch com.	25	..	24½	*23	27	22	28	20	..	..
Vacuum Oil	25	†3.75	91⅜	91	96¼	80⅛	83¼	56½	55½	40
Washington Oil	10	..	*32	*32	30½	30	29	25	28	20¼
Miscellaneous Stocks										
Cities Service bks. sh.	..	..	20⅜	20½	21	17⅜	19	13¼	18½	12⅜
Continental	10	10	29½	27⅜	31⅛	25½	..	..	..	..
Gulf Oil Corp. of Pa.	25	6	68	67½	71	65⅛	67⅜	56	68¼	45⅜

*Bid, no sales. †In dollars. ‡Six per cent cash and 6 per cent scrip annually. §The figures in this column are kept up to date as far as possible, but are not guaranteed. xCents per share.

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange was as follows:

Dec. 22	50.76	Jan. 26	56.09	Mar. 2	59.56
Dec. 15	50.36	Jan. 19	54.68	Feb. 23	58.02
Dec. 8	49.49	Jan. 12	55.28	Feb. 16	56.96
Dec. 1	49.59	Jan. 5	53.01	Feb. 9	58.39
Nov. 24	50.23	Dec. 29	51.73	Feb. 2	59.24

UNSATISFACTORY WEEK IN OIL CITY MARKET

OIL CITY, Pa., Mar. 1.—The past week was a very unsatisfactory one in the western Pennsylvania refined market and as a result prices on some of the products are lower while there has been a general weakening of the market's structure. The market was very quiet and prices in general were off some.

The demand for gasoline was off to some extent probably as a reaction to some of the big business that has been done lately and perhaps in part due to the fact that an expected tankwagon advance in this section failed to materialize.

Every product in the list was weaker than it has been for a week, even was being affected by the softening condition.

ORDERS GASOLINE ELECTRIC CAR

A contract for gasoline-electric car for light passenger service has been placed with the J. G. Brill and Westinghouse companies by the Reading Co., formerly the Philadelphia & Reading Railway. The car is to have a generator 40 per cent larger than previous types, driven by a 250 horse power gasoline engine. Two 140 horse power 600-volt electric motors constitute the final drive to the wheels. Seating capacity for 50 persons is to be provided, as well as space for baggage and freight. The maximum speed is 60 miles an hour.

NO NEW YORK GASOLINE TAX

ALBANY, N. Y., Feb. 28.—In accordance with an agreement reached among the Republican leaders, two bills proposing a gasoline tax were rejected in a report submitted to the Legislature by the Committee on Motor Vehicles.

Treating Refinery Products Important

Competition Rapidly Compelling Better Quality of Products. Agitator Process and Chemistry Described

By Dr. C. K. Francis*

Among the foremost problems of the petroleum industry there is probably none more important than that of purity. In using the word purity I refer specifically to the quality of its commercial products. The remarkable increase in demand, within the past 20 years, for all petroleum products has been so great that the matter of quality up to the present time has, to some extent been overlooked.

This conditions is no doubt passing but the demand for quality has steadily advanced. The specifications controlling quality have become more numerous and exacting each year. From gravity and color specifications we have advanced to distilling with fractional percentages initial end point, vapor tension, gum forming and corrosion tests.

Competition is rapidly compelling better products to be marketed. What may be said of gasoline applies equally well to kerosene and other petroleum products.

The refinery operations which are confined to the purification, after the separation from the crude, are filtering and treating. The treating process may, and often does, include more or less filtering, so for the purpose of this paper, filtering shall be considered a part of the treating operation. The purification of petroleum distillates has from the very early days of the industry been accomplished by the use of acid and alkali—usually sulphuric acid and caustic soda.

The Agitation Process

The usual method for treating gasoline, kerosene, lubricating oils and other products is commonly called the agitator process. The material is pumped into a specially constructed tank which is provided with means for mixing the liquids, and while formerly paddles and other devices were used, it is now the common practice to mix or agitate by means of compressed air. While the liquid is being agitated, sulphuric acid is added. The quantity of acid may vary from a fraction of a pound to six pounds per barrel of the product treated, when treating gasoline and kerosene. It may be necessary to use very much more for certain grades of lubricating oils. The quantity of acid varies according to the material and the specific results desired.

The liquid is washed free from acid by showering water through it Then, to be very certain that no trace of acid remains, and to remove some sulphur compounds, it is washed with an alkaline solution of caustic soda. It is often necessary to add lead and sulphur. The alkaline treatment is commonly known as sweetening. I shall speak of these in more detail.

After the acid and alkali treatment, the product is usually ready for shipment. Sometimes it may be necessary to redistill it. There are several combinations for applying the agitator process. I have simply given a brief outline of the general process. The method has had practically no satisfactory scientific explanation until quite recently. It was taken that a sweet gasoline would go off test during storage. A good doctor test oil would become sour on rerunning. Often a treated product would contain more sulphur than the crude from which it was made.

Some objectionable results have been caused by under treatment with acid. This is not often true, because the treater believes in adding plenty of acid and almost constant supervision is required to keep down the acid expense.

Bad Odor of Gasoline

An oil under-treated with acid does not stand up and much of the subsequent treatment is nullified. Consequently, the addition of excessive quantities of acid is really tempting. Hydrogen sulphide, mercaptans, and sulphur dioxide are usually the sulphur compounds responsible for the bad odor of certain gasolines and kerosenes. This may be particularly true of under-treated fractions, those which have been rerun, and pressure still products. Hydrogen sulphide is a decomposition product of many animal substances. It is responsible for the bad odor of a stale egg. It finds its way into crude oil probably through the decomposition of organic material when the petroleum was formed. It is a gas and therefore passes off from the crude into the lighter distillates at low temperatures. The action of sulphuric acid and some sulphuric compounds produces hydrogen sulphide. The proper contact with caustic soda and alkaline lead change it into other substances easily removed. However, some compounds do not react to the doctor test, so a product may contain sulphur and yet be sweet. Some of these substances are broken up by heat, and it is these that are often the cause of a sweet product becoming sour or being rerun. A proper study of the crude and the products from it, aids in formulating the required treating methods. The preparation of gasoline and kerosene by means of pressuré stills introduced an interesting treating problem.

It was found that pressure distillates did not respond to the ordinary methods used for treating The gasoline and kerosene was often of poor color, had an objectionable odor, contained an excess of sulphur, contained gum forming substances, frequently contained acid, and went off color in storage. The character of the original crude and the product charged to the pressure stills, of course, influence the properties of the distillate. Many combinations of acid and alkaline treating together with distillation and filtering have been developed. Alkaline substances, introduced into the return still with the pressure distillate, have been found to be successful in many instances. Such material should decompose or evaporate at a relatively low temperature. Caustic soda, for example, has not proven satisfactory because the solid caustic is deposited in the still and causes damage to the still bottom through the formation of hot spots.

Treating and Rerunning

Some refineries apply the full acid treatment, follow with a slightly alkaline wash, then rerun. The sweetening stage of the treating is applied to the overhead, which has been brought to boiling point specifications. This is logical, because when a petroleum product is fully treated and sweet to the doctor test and then distilled, it will often become sour. A substance which is not darkened by the doctor solution will, when decomposed, form other substances which do react with the doctor solution. Therefore, when a distillate is to be redistilled, it is not advisable to apply the treating process in full before running. It is usualy better to give the full acid treatment, follow with a weak alkaline wash, to prevent any acid going into the still, then rerun. The rerun distillate should then be sweetened with plain alkali or with the lead sulphur as necessary.

The pressure still products are better treated in closed agitators and preferably of the continuous type. These products are more difficult to purify. Those color and gum forming substances are not present in the ordinary crude fractions. They are more easily produced in the presence of light and air than in darkness and when care is observed to exclude the light. The closed treating unit is to be preferred for the additional reasons of increased volume and less loss by evaporation. A continuous treater may be easily made from pipe and fittings. They have been found so satisfactory and so much superior to the open agitator that this well known symbol of petroleum refining will probably soon be discarded by many refiners.

The continuous movement of the stream from the still until ready for shipment is to be desired. This, when accomplished, means a great saving in operating costs. The sweetening of the light stream can be done by permitting it to pass through an alkali closed treater by gravity on its way to the storage tank. When such treators are arranged in pairs, there need be no loss of time when one is shut down for cleaning or repairs. Dilution of the treating chemicals from water, coming over with the distillate, will be prevented if a separating trap is placed in the condenser coils and thus direct the hot water to a soft water tank.

Contact Filtering

An advance in treating methods has been made in the so-called contact filtering process. This method has employed a special clay, also a very fine Fullers earth is being used. It is especially applicable to lubricating oils but no doubt may be applied with some modifications to kerosene and other light fractions. The contact process consists, briefly, in agitating the oil with the fine clay and acid at an elevated temperature in a closed tank. The mixing is done by paddles or some stirring device other than air. After a slight setting, the clay is removed by passing the oil through plate filters.

A step toward complete refining of the fluid between the still and the storage tank, has recently been accomplished in the Barnsdall installation of the Gray process for treating pressure distillate. This process has an additional advantage in that it does away with the necessity for treating the sulphuric acid, always an objectionable and troublesome substance to handle. It is claimed that the method produces a bright and clear product which is free from many of the objectionable substances found in the ordinary acid treated pressure still gasolines and kerosenes.

The Gray treating process is very simple as to operation and apparatus. The vapors from the still are passed through a jacketed filter before they are cooled and condensed. The filter consists of an upright tank charged with 60/90 Fullers earth. The hot vapors from the still pass upward on the outside of the filter and thus maintain the Fullers earth at the temperature of the vapor steam; which will usually be between 350-450 degrees F. during the run. The hot liquids and vapors pass down through the filter. The heavier portions appear to select the color and gum forming compounds as they flow to the bottom of the filter. The purified material passes off near the bottom, to the condenser.

The process yields 65 per cent water white product on the basis of the quantity of pressure distillate charged to the re-run still. This product is not ready to be marketed but must be sweetened.

Chemistry of Treating

In conclusion it may be of some interest to present some of the chemistry of the treating process. I have stated that until recently no satisfactory explanation had been made of just what takes place. Investigations in the research laboratories of the Standard Oil Co. (Indiana) and the University of Pittsburgh, have given us some very illuminating information on the subject. The principal substances acted upon during

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*Before Western Petroleum Refiners' Association at Kansas City, Mo.

CORROSION TROUBLES IN REFINING; THEIR CAUSES AND CORRECTION

By F. W. L. Tydeman

*Superintendent Roxana Petroleum Corp., Wood River, Ill.**

Stepping over the general theories, and also the matter of importance, which any one can estimate according to his inclination by multiplying the total barrels refined by such figure as he believes expresses the average share of corrosion troubles in total maintenance and other costs, we can consider the problem technically from the point of view that in general there are three things necessary wherever corrosion occurs.

1. There is a corrosive substance;
2. A material to be corroded;
3. A set of conditions which enables the first to act upon the second.

In considering remedies we have to pay due attention to all three. That is, we can try to eliminate the corrosive substance, or use a material that is not attacked by it, or modify conditions so the attack will not take place or will be greatly decreased.

Let us take as a first instance corrosion in the topping distillation. Here we find the two major problems:

1. Corrosion of the heating surface;
2. Corrosion of the condensing and cooling surfaces.

Of the heating surfaces we can have both external and internal corrosion and so far the former seems to cause most of the trouble. The main corrosive agent seems to be oxygen, acting upon the metal of the still by direct chemical action accelerated by high temperatures.

Analyzing the problems as outlined we find we can do very little towards excluding the corrosive agent. It is not possible in practice to fire without using excess air, and if we use only 10 per cent of the latter we still have some .3 pound oxygen per pound of fuel oil. This amount of oxygen can combine with about .7 pound of iron. It takes very little figuring to estimate that even under these most advantageous conditions enough excess oxygen will be used in an ordinary pipe still to combine with all of the iron exposed to the flue gas in about two days. It does not seem practicable therefore to attack the problem from this point of view.

In the matter of altering conditions, the main point seems to be to lower the surface temperature of the metal. Of the factors involved, I may mention first the formation of deposits on the internal surface, decreasing heat transference and thereby raising the external temperature of the metal. The natural remedy is to have the crude as clean as possible. Where it will, in most cases, contain some salt dissolved in water we can decrease deposits by maintaining high speeds relative to the inner surface. In shell stills it is common practice to use steam which also has other advantages. In pipe stills we can increase speed by decreasing the

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*Before Western Petroleum Refiners' Association, Kansas City, Mo.

REFINING AND MARKETING

WILL BUILD REFINERY AT MIRANDO CITY, TEX.

SAN ANTONIO, Tex., Mar., 2.—Wheatley Oil Co. of San Antonio, Tex., with a production of about 1,000 bbls. daily in the Mirando Field of Webb County, is getting estimates on the construction of a refinery to be built at Mirando City on the Texas-Mexican railroad. A pipe line from the lease to Mirando City was completed recently and storage and terminal facilities at Aransas Pass secured.

The company began marketing its own product this month, having secured Roy Wight, formerly with the Witherspoon Oil Co. as sales manager. On completion of the new port at Corpus Christi it proposes to secure terminal facilities there. In addition to its own production which it is marketing as fuel oil, pending the building of its refinery, it is handling refined products of other concerns.

REFINERY AT BARNSDALL NOT GREATLY DAMAGED

Operation of the cracking plant of the Barnsdall Refining Co. at Barnsdall will not be impaired greatly as a result of the explosion and fire, which wrecked one high pressure still and damaged two others. The explosion Sunday killed two men and injured two others.

The total damage has not been estimated by the company. There are eight Fleming stills at the plant but only the three were damaged, which will not affect the plant seriously. The men killed were Silas Frank, 45 years old, and Jack McMasters, 32 years old. Both are employes of the company and were working near the still when it exploded. The fire was confined to the battery of cracking stills which are located some distance from the main plant.

PURE OIL FIRE AT CUSHING

CUSHING, Okla., March 2.—Approximately 30,000 bbls. of oil, a 55,000-bbl. steel tank and a farm house were destroyed in a fire here at a tank farm of the Pure Oil Co. The loss was estimated at $90,000. The fire started early Sunday when a metal plumb bob fell against the roof of the tank, causing a spark. The huge drum burned more than 10 hours, when the fuel was exhausted. Efforts to drain off the oil from the bottom saved only a very small portion.

TAPPING LINES A FELONY

Tapping natural gasoline and crude oil lines in Oklahoma is punishable with a sentence of from one to five years in the State penitentiary under House Bill No. 17, which has been signed by Governor Trapp and now is a law. Under this bill tapping of these lines is a felony.

The same law rates stealing drip gasoline or crude oil from receptacles or containers as a misdemeanor and provides a fine of $100 or a sentence of 60 days in jail, or both.

NO ILLINOIS GASOLINE TAX

SPRINGFIELD, Ill., Feb. 28.—The gasoline tax was killed for this session of the Legislature, when Frank T. Sheets, State Superintendent of Highways, was called before the Senate and declared his department has all the money it can use for the next four years' construction program and that no additional revenue is necessary before January 1, 1929.

NORTH TEXAS FIELD GASOLINE SHIPMENTS

A total of 419,694 bbls. of casinghead gasoline was shipped out of the North Texas territory during the month of January 1925. The largest amount shipped from any district was 186,323 bbls., shipped from Eastland County. Stephens County ranked second with shipments totaling 141,643 bbls.

The following gives the amounts shipped from each district in the North Texas territory: Electra, 14,212; Burkburnett, 41,766; Young County, 11,070; Stephens County, 141,643; Eastland County, 186,323; Shackelford County, 22,503; Brown County, 1,118; Carson County, 1,059; total, 419,694 bbls.

TANK WAGON PRICES MARCH 1 HIGHEST SINCE AUGUST 1, 1923

The highest average tank wagon gasoline price since August of 1923 resulted on March 1 from general advances during February which applied to every State including the territory of the Standard Oil Co. of California which was not represented in the general January advance. The average for 50 representative cities on March 1 was 2.33 cents higher than on February 1 and compared with a gain of 2.84 cents during January, making a total gain of 5.17 cents since the first of the year. The prices as shown in the accompanying table, were 19.07 cents on March 1, this year, 16.74 on February 1, and 14.9 cents on January 1.

Comparisons on similar dates in 1923 and 1924 with the February and March figures of this year reveal that the gain in price during the month of February 1925 was considerably more than in the same period last year when the advance was 1.19 cents and was also somewhat larger than in 1923 when the February gain was 2.20 cents. While the February 1 average price this year was nearly a cent under the February 1, 1924, average, the March 1, 1925 average was two-tenths of a cent above the March 1, 1924 price. The March 1 price this year, however, was still 2.46 cents below the price on the same date in 1923.

The present average of 19.07 has not been exceeded since August 1, 1923, when gasoline average 19.11 cents. The peak of that year was on March 1 when the price was 21.53 cents. The only change in the gasoline taxes in February was the increase in Tennessee from 2 to 3 cents. The 2-cent tax in Michigan was effective January 30.

GASOLINE PRICES EFFECTIVE ON MARCH 1, 1925

Table showing gasoline tank wagon prices as of March 1, 1925, exclusive of taxes in fifty representative cities, including the amount and date of changes since January 1, 1925. High and low prices and State taxes also given.

	Jan. 1	Changes in January			Changes in February				March 1	Feb. 1	High and Low Prices 1924		1923		Taxes Mar. 1 1925
Birmingham, Ala.	13.0	19 15.0	28 17.0	....	6 19.0	....	20.0	....	20.0	17.0	20.0	13.0	20.0	14.0	3.0
Phoenix, Ariz.	18.0	....	....	....	4 20.0	....	....	....	20.0	..18.0	20.0	16.0	22.5	17.5	2
Little Rock, Ark.	13.0	16 14.5	23 16.0	27 17.0	....	5 19.0	....	....	19.0	17.0	18.0	13.0	20.5	12.5	4.0
San Francisco, Cal.	13.0	....	....	....	4 15.0	....	....	....	15.0	13.0	15.0	11.0	19.0	12.0	3.0
Denver, Colo.	12.0	26 14.0	28 15.0	....	6 17.0	16 19.0	....	....	19.0	15.0	19.0	12.0	20.0	11.0	3.0
Hartford, Conn.	15.0	15 17.0	24 18.5	31 19.5	4 21.0	....	....	....	21.0	19.5	20.0	13.0	24.5	15.5	1.0
Dover, Del.	15.0	23 16.0	28 17.0	....	3 19.0	....	....	....	19.0	17.0	20.0	14.0	23.0	14.0	2.0
Jacksonville, Fla.	12.0	19 14.0	28 16.0	....	6 18.0	....	24 19.0	....	19.0	16.0	19.0	12.0	20.0	13.0	3.0
Atlanta, Ga.	14.0	19 16.0	28 18.0	....	6 20.0	....	24 21.0	....	21.0	18.0	19.0	11.0	22.0	13.0	3.0
Boise, Idaho	19.5	....	....	....	5 20.5	6 21.5	....	....	21.5	19.5	22.5	18.0	24.0	18.0	3.0
Peoria, Ill.	13.0	23 14.0	26 15.0	31 16.0	....	13 18.2	....	....	18.2	16.0	18.2	13.0	20.8	12.2	...
Chicago, Ill.	13.0	23 14.0	26 15.0	31 16.0	....	13 18.0	....	....	18.0	16.0	18.0	13.0	20.0	12.0	...
Indianapolis, Ind.	13.2	23 14.2	26 15.2	31 16.2	....	13 18.2	....	....	18.2	16.2	18.2	13.2	20.8	12.2	2.0
Des Moines, Iowa	13.5	23 14.5	26 15.5	31 16.5	....	13 18.5	....	....	18.5	16.5	18.5	13.5	21.1	12.5	...
Wichita, Kans.	12.8	23 13.8	26 14.8	31 15.8	....	13 17.8	....	....	17.8	15.8	17.8	12.8	20.4	11.8	...
Louisville, Ky.	12.0	19 14.0	28 15.0	....	2 16.0	9 18.0	24 19.0	....	19.0	15.0	19.0	12.0	21.0	13.0	3.0
New Orleans, La.	11.5	15 14.0	23 15.5	27 16.5	4 18.5	....	....	....	18.5	16.5	16.5	11.5	19.5	10.5	2.0
Augusta, Maine	15.0	15 17.0	24 18.5	31 19.5	4 21.0	....	....	....	21.0	19.5	19.0	13.0	24.5	15.5	1.0
Baltimore, Md.	13.0	15 14.0	23 16.0	27 17.0	3 19.0	....	....	....	19.0	17.0	19.0	13.0	22.5	15.0	3.0
Springfield, Mass.	15.0	15 17.0	24 18.5	31 19.5	4 21.0	....	....	....	21.0	19.5	20.0	13.0	24.5	14.5	...
Detroit, Mich.	13.8	23 14.8	26 15.8	31 16.8	....	13 18.8	....	....	18.8	16.8	18.8	13.8	21.8	13.2	2.0
Duluth, Minn.	14.5	23 15.5	26 16.5	31 17.5	....	13 19.5	....	....	19.5	17.5	19.2	14.5	21.5	12.5	...
Natchez, Miss.	11.5	19 13.5	28 15.5	....	6 17.5	24 18.5	....	....	18.5	15.5	18.5	11.5	20.0	12.5	3.0
Kansas City, Mo.	12.9	23 13.9	26 14.9	31 15.9	....	13 17.9	....	....	17.9	15.9	17.9	11.9	19.5	10.9	3.0
Helena, Mont.	18.0	23 19.0	....	28 20.0	6 21.0	16 22.0	....	....	22.0	19.0	23.0	18.0	23.5	18.0	2.0
Omaha, Neb.	11.0	24 12.0	28 13.0	31 14.0	....	18 16.0	....	....	16.0	14.0	18.25	11.0	20.5	12.25	...
Reno, Nev.	16.5	....	....	....	4 18.5	....	....	....	18.5	16.5	18.5	14.5	22.5	15.5	2.0
Newark, N. J.	13.5	15 14.5	23 16.0	31 17.0	3 19.0	....	....	....	19.0	17.0	19.5	13.5	23.5	15.5	...
Albuquerque, N. M.	19.5	28 20.5	....	....	6 21.5	18 23.5	....	....	23.5	20.5	23.0	18.0	25.5	17.0	1.0
New York, N. Y.	15.0	15 17.0	25 18.5	31 19.5	4 21.0	....	....	....	21.0	19.5	20.0	14.0	24.5	15.5	...
Charlotte, N. C.	12.0	15 14.0	23 16.0	27 18.0	3 20.0	....	....	....	20.0	18.0	19.0	12.0	21.5	15.0	3.0
Fargo, N. D.	14.9	23 15.9	26 16.9	31 17.9	....	13 19.9	....	....	19.9	17.9	19.6	14.9	24.3	13.6	1.0
Cleveland, Ohio	15.0	28 16.0	....	....	4 17.0	....	19 18.5	....	18.5	16.0	20.0	15.0	21.0	16.0	...
Tulsa, Okla.	9.5	19 10.5	26 11.5	27 12.5	2 14.5	4 15.5	13 16.5	19 17.5	17.5	12.5	18.0	9.5	20.0	8.0	2.5
Portland, Ore.	13.0	....	....	....	4 15.0	....	....	....	15.0	13.0	16.0	12.0	20.0	13.0	3.0
Philadelphia, Pa.	15.0	23 16.0	28 17.0	....	3 19.0	....	....	....	19.0	17.0	20.0	14.0	23.0	14.0	3.0
Providence, R. I.	15.0	15 17.0	24 18.5	31 19.5	4 21.0	....	....	....	21.0	19.0	20.0	13.0	24.5	15.5	...
Charleston, S. C.	12.5	15 14.0	23 16.0	27 18.0	3 20.0	....	....	....	20.0	18.0	19.0	12.5	22.0	15.0	3.0
Huron, S. D.	15.0	23 16.0	....	....	....	13 19.9	....	....	19.9	16.0	20.0	15.0	22.6	14.0	3.0
Memphis, Tenn.	12.0	15 13.5	23 15.0	27 16.0	4 18.0	....	....	....	18.0	16.0	18.0	12.0	20.0	12.0	3.0
Dallas, Texas	10.0	19 11.0	26 12.0	....	2 13.0	4 14.0	18 16.0	....	16.0	12.0	17.0	9.0	19.0	6.0	1.0
Salt Lake City, Utah	17.5	28 19.5	....	....	6 21.0	....	....	....	21.0	19.0	21.5	16.5	23.0	15.5	3.5
Burlington, Vt.	15.0	15 17.0	24 18.0	31 19.5	4 21.0	....	....	....	21.0	19.5	19.0	13.0	24.5	15.5	1.0
Norfolk, Va.	14.5	23 16.5	27 18.0	....	3 20.0	....	....	....	20.0	18.0	19.0	14.5	21.5	15.0	3.0
Washington, D. C.	14.0	23 16.0	27 17.0	....	3 19.0	....	....	....	19.0	17.0	19.0	14.0	23.0	15.0	3.0
Charleston, W. Va.	14.0	23 16.0	27 17.0	....	3 18.0	....	....	....	18.0	17.0	19.0	14.0	23.0	15.0	3.0
Milwaukee, Wis.	13.1	23 14.1	26 16.1	31 16.1	....	13 18.1	....	....	18.1	16.1	18.1	13.1	19.6	12.0	...
Casper, Wyo.	14.0	28 15.0	....	....	6 17.0	16 19.0	....	....	19.0	15.0	19.0	14.0	18.0	13.0	1.0
Seattle, Wash.	13.0	....	....	....	4 15.0	....	....	....	15.0	13.0	16.0	12.0	20.0	13.0	2.0
Minneapolis, Minn.	14.2	23 15.2	26 16.2	31 17.2	....	13 19.2	....	....	19.2	17.2	18.9	12.0	....	....	...
Average price	14.9	....	....	....	....	....	....	....	19.07	16.74	18.99	13.27	21.71	13.65	1.76

Continuous Type of Pressure Process

Greater Margin of Safety and Flexibility With Lower Investment Charges and Operating Costs Claimed for Cracking Apparatus

By Frank A. Howard*

Without intending to venture a prediction that the future of oil cracking will be less active, interesting, important and perilous to life, liberty and dividends, than the past decade, it seems to one who has been tied to the wheel of this chariot for 10 years past that the pace is slower for the moment, at least. In this breathing spell of relative quiet, therefore, it is possible to get a picture of the situation, which, while far from complete and accurate in detail, may at least serve as a general perspective.

The four boundaries of this perspective of the situation are statistical, economic, technical and legal.

On the statistical side, official figures of any completeness are lacking. Estimates have been furnished by various authorities, and without regard to any question of detailed accuracy of these estimates it appears certain that the cracking process is now second only to crude distillation as a source of motor fuel, being in regular extensive use in certainly the majority of complete refining units of the industry as well as in a fair proportion of the larger skimming plants. Cracking is now in the same general category as coking or steam stilling with regard to its status in the industry as a whole.

On the economic side of the picture, it appears that for the coming year cracking may be expected to result in a conservation of crude petroleum as great as the total production of crude at the time the earliest inventors began their work.

More Costly Operation

No more is it true here than elsewhere that gains may be had without pains. To compare in detail the consumption of human labor, fuel, chemicals, steel and other materials required for the cracking of oil, with the corresponding requirements for the production and refining of the crude oil which would be necessary to supply the equivalent in gasoline is a task which leads too far into the field of conjecture to be of any value. It is at once apparent, however, that cracking is a more costly manufacturing operation than simple crude distillation and that in the main the economic gain is that it substitutes for consumption of human labor, largely skilled labor, fuel, and manufactured materials, which, economically speaking, should find an increased market rather than be conserved.

From the technical standpoint, commercial cracking may be said to be standardized along the lines of high pressure pyrongenesis. There are in use low pressure and chemical cracking processes, but neither commercially nor scientifically are they at the moment of sufficient importance to deserve more than mention in a general picture of the situation.

The high pressure pyrogenesis method is represented by two main divisions, which at the present time are of almost equal commercial importance: First, the simple high pressure distillation processes of which the progenitor was the original Burton pressure still. Second, the continuous, pump fed, coil heated type of pressure cracking process, of which the original Ellis tube and tank apparatus appears to have been the earliest example.

Simplicity of First Type

The inherent simplicity of the first type permitted standardization to be brought about within a relatively short time, and while the Burton still of today is substantially better in performance than the earlier types, this improvement has resulted from refinement of detail of construction and operation rather than change of design or method. At the present time, the standard construction for this apparatus is a 10-foot by 30-foot horizontal cylindrical shell surmounting a furnace setting, in which lies a bank of inclined tubes, rolled into a common header of steel plate at each end the two headers connecting with the shell by large vertical circulating legs. This general design, known as the Clark Tube Still, is not only standard with most of the licenses of the Burton process, but has been quite widely adopted by other users of the simple distillation process. The standard type of these stills has a charging capacity of 13,500 gallons, and is usually fed during the run, the total feed being somewhat less than the original charge. Operation takes place at from 50 to 150 pounds pressure, using a clean distillate of 28 to 38 degrees Baume as a charge, and producing slightly over 50 per cent of distillate, which upon finishing yields gasoline to the extent of 25 to 35 per cent of the charge and feed stock. Condensation is under full still pressure in the case of the Burton licenses and under atmospheric pressure or some intermediate pressure in the case of other users of this type of equipment. The loss of light fractions resulting from low pressure condensations is in some instances partly offset by the use of gasoline recovery systems. All pressure cracking stills of this description are equipped with extensive reflux fractionating steam condensers, the efficiency of this portion of the construction being of the utmost importance. Stills of this type cost from $35,000 to $70,000. When operated, inspected and maintained in proper and safe order by an experienced staff, they have proved themselves to be a reliable, efficient and not unduly hazardous type of equipment.

Lines of Improvement

The second general division of cracking equipment, represents in its commercial development the effort of the industry to escape from certain inherent limitations of the simple pressure distillation process. The improvement sought has been along the following major lines:

1. Greater margin of safety.
2. Greater flexibility.
3. Lower investment charges.
4. Lower operating costs.

The safety record of the simple pressure distillation process, both from the standpoint of hazard to life and fire risk, while remarkably good, is at most a reflection of the skill, courage, faithfulness and loyalty of the refinery operating staffs as the apparatus and process itself. Pressure still operation is recognized as a hazardous business which becomes safe only when those responsible for operation work with a clear and full realization of its hazard. This means that pressure still forces are the pick of the refining industry.

In the newer processes, the human element has been rendered less important by confining the major risk of fire and explosion to a small diameter continuous heating coil, the major body of oil under treatment being carried in separated pressure vessels which are either not heated at all or are heated only by low temperature combustion gases. The arrangement is always such that rupture of the heating coil under heavy firing may be expected to produce results far less disastrous on the average than rupture of a still bottom, or even one of the tubes of a Clark type still. It must be admitted that in some of the newer processes complication has gone to such lengths that net gain from a safety standpoint is doubtful, but on the whole it is fair to say that some advance has been made. The record to date indicates that very clearly.

Diagrammatic View

The diagrammatic perspective view of a tube and tank cracking apparatus which is attached to this article will be sufficient to exemplify a representative modern development. In addition to the tankage for feed stock and products, the complete equipment includes a combined pump and receiving house, the roof of which carries the condenser box. All operating controls save for the furnace burners themselves are located in the pump house. In well designed installations of this type, full benefit has been taken of the experience gained in pressure still operation to locate and arrange the pump and receiving house so that it is relatively immune from the consequences of any fire originating in the cracking equipment proper, and the house itself is usually subdivided so that fires originating in one part of the control system may not prevent taking the unit off pressure.

There is as yet no general standardization on the question of furnace design for the coil settings of the various types of continuous cracking processes. The furnace setting shown by the diagram is a side fired setting which has shown reasonably good furnace efficiencies, this being a point which has been one of the most difficult of solution in the perfection of the continuous type processes.

The pressure vessels, or tanks, of the apparatus, which in refinery parlance have had the name "soaking drums" applied to them, are marvelous examples of the improvement in the boilermaking art. Those generally used for the tube and tank process are 6 feet in diameter and 40 feet high, rolled up of eight sections of 2-inch plate, each section being a ring with but one seam which is a quadruple riveted buttstrap. The hammer welded or forge welded type of pressure vessel is used quite extensively for large pressure vessels in processes other than the tube and tank. The smaller pressure vessels designed for pressures of 500 pounds and upwards are at the present time exclusively of the seamless forged billet type. The vertical mounting of the pressure vessels is at present the most common form of mounting, being used almost exclusively except for the small high pressure vessels. The range of pressures employed is now quite wide, running from 100 to 1,000 pounds per square inch.

Rectification Equipment

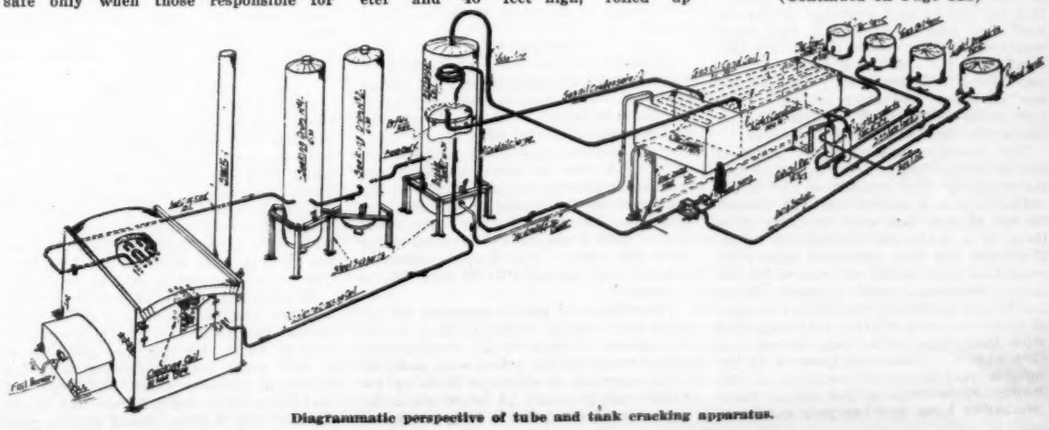
The separation and rectification equipment used with the continuous type processes as yet shows no tendency towards standardization in the field as a whole, save for the circumstance that, generally speaking, plate type rectifiers of some form are usually embodied in the continuous processes.

From the standpoint of flexibility, the continuous processes almost all represent a real advance over the simple pressure distillation processes. The tube and tank process is in operation at various points on literally all common stocks heavier than gasoline and ranging from heavy naphtha and kerosene distillates to the heaviest common residual fuel oils. This flexibility not only extends to the character of the charging stock which may be handled but also to the relation between throughput and yield of gasoline. It may at first glance seem that the production of a maximum quantity of gasoline would in all instances be desired, but this is far from being the fact. The aim of the refiner may be to produce a maximum earning from a given plant investment or it may be to produce a maximum earning from a limited supply of crude oil or distillate of a certain type, and these two fundamentally different situations when permuted with the relative prices of crude oil, gasoline, kerosene, gas oil and fuel oil, give a range of optimum operating conditions which demand of the cracking apparatus an almost limitless degree of flexibility, if one conceives that his cracking plant is to represent an investment rather than a speculation.

Investment and Operation

The technical advances along the line of saving of investment charges have been very important, although in some of the modern processes which are very extensively used the desire to obtain the absolute minimum of operating charges has resulted in again running up the in-

(Continued on Page 111)



Diagrammatic perspective of tube and tank cracking apparatus.

*President Standard Development Co.

CHICAGO MARKET LIMITED; WEAKER

Jobbers Holding Back for More Attractive Quotations. Ask Larger Share of Advance. Kerosene Sags. Distillates Quiet. Gas Oil Easy and Fuel Oil Off. Lubricants and Tank Wagon Markets Unchanged

By J. B. Waldo

CHICAGO, Feb. 28.—This is the last day of February and the Chicago oil industry is a unit in declaring it is glad of it. Still the oil industry is faring as well as other industries, in fact a good deal better than some. A leading financial institution has issued its annual report on business conditions and prospects. It says the petroleum industry made a relatively better showing in 1924 than most lines of business. This institution bases its summaries on replies from 3,000 typical industrial concerns in all lines in all parts of the country. Of the entire list only 43 per cent reported sales gains for 1924 over 1923 while the petroleum group reported 70 per cent increases against 30 per cent who reported decreased sales compared with 1923. Of the oil firms reporting 80 per cent reported better prices in 1924 than in 1923 while 10 per cent reported the same prices and 10 per cent lower prices. Regarding prices during 1925, 55 per cent of the oil concerns reporting expected better prices and 45 the same prices while none looked for lower prices than during the year just closed.

The jobbers are still far from satisfied with the present range of prices. The Bulletin of the National Petroleum Marketers' Association out today says, "In our opinion, the market cannot be said to be firmly established or on a proper basis until the spread between the laid-in costs and the current tank wagon markets is at least 4 cents. The market that does not give the distributor a legitimate and obviously necessary margin of profit is just as economically unsound as is a market that provides excessive spreads and glaringly wide margins of profit." This statement is preceded by the remark that the gasoline markets not only are weak but are slipping, adding it is right and proper they should and advising against advance buying for spring as a gamble on the weather. This bulletin is mentioned because it is received by many jobbers and is believed in the Chicago market to exert considerable influence on those that receive it. It may be one reason why the jobbers have ordered so sparingly during February.

Want 11-cent Gasoline

Several of the larger distributors in the vicinity of Chicago have been in the market during the week and they have pronounced views regarding gasoline prices. Several have stated their idea of price was 11 cents for Motors gasoline and they further stated they expected to buy at that price. This may be a sort of "bluff," or they may be sincere in their statements that they expect to buy at approximately that figure. The consumption has slowed up a good deal during the past two weeks. At first it was warm weather, then the snows, then a rain that carried off the snow in a couple of days and turned soft roads into swamps and now the severe cold which has made these soft roads a maze of iron-clad ridges, where the tires had rutted the roads.

The condition has made the going as bad as it was last year at this time and the result is that outside of the larger cities there is a partial embargo against the use of cars and even in these cities there is a noticeable absence of autos. The trade has been afraid of some such conditions and this is one reason for the lack of business from the jobbers. There has been some talk of the limited number of marginal contracts this year compared with last. The writer has looked into this with some care and gives it as his opinion that as many contracts on the whole are in force as last year. Some companies have had two-year contracts. In several cases it has been stated important jobbers had not made a contract for this year or had not renewed their contracts. In several such cases they had contracts that did not have to be renewed as they were made for two years with no provision requiring action on the part of the jobber so when they said they had not renewed their contracts they were telling the truth, exactly, but they caused an impression opposite to the fact. This being the case the seller in the spot market has no larger list of customers to look for orders than a year ago. Last year the wide spread between the marginal contract price and the spot refinery market caused a good many jobbers to ignore their contracts and buy in the spot market at the lower price.

Prices Weakened

The gasoline demand has been very limited during the week and prices have weakened under rather free offerings both of resale lots and by some refiners. It has been hoped next week would witness a stronger market as the low priced gasoline for February delivery would be out of the market, except possibly in small amounts for a few days. But recent free offerings of U. S. Motors gasoline over March at prices as low as 12½ cents (and some say some has been bought at a little less,) indicates the market may not be materially higher until the demand develops from the jobbing trade. It was thought the jobbers' supplies might be pretty low by the fifth to the tenth of March but the rate of consumption has probably been less than was reckoned on when these estimates were made and the jobbers may stay out of the market for a while longer, unless prices seem attractive to them. How the refiner will take their ideas as to a price for gasoline is not a matter of questioning. Jobbers claim they should have one-half of any tank wagon advance. They say the advance in the tank wagon prices is 5 cents and the refiner should be content with 2½ cents which added to the market before the advance would make a refinery price of 11 cents or 11½ cents at most. At this writing the Chicago spot market price is not over 12¾ to 13 cents for U. S. Motors gasoline. The demand is light and offerings ample for spot at 12½ cents at the refinery and it can be had on a less basis from Mid-State plants for immediate delivery. The last Greenslade order placed this week went at 12¼ cents it is reported. A large number of sellers bid on this order which was for a trainload, for early delivery and the most common bid was 12½ cents but they early were informed that price would not get the order. The higher gravities have done a little better than U. S. Motors in holding prices but the reason is the small supply rather than the active demand. The price was not very definitely settled but 60-62—440 end point could be had at 14¼ cents and 64-66—375 end point at 15¾ cents, at the close of the week and month.

Kerosene Sags

Kerosene has not been able to hold its market and has sagged quite a bit during the week. For some reason, very likely the country buyers would say it was the bad weather and the state of the roads the distributors have failed to come forward with their orders as expected and with some pressure to move stocks at the refineries in the shape of requests for shipping instructions, the price has sagged until it can hardly be called better than 4¾ cents. The Empire refineries reduced their price for 41-43 from 5¾ to 5 cents.

Distributors of special naphthas for the paint and varnish trade say they cannot get enough product to fill requirements but undoubtedly the prices were made by early contracts so they are realizing for VM&P naphtha only 14 cents, while the present tank car price is 17½ cents and the tank wagon price 21 cents. This demand is caused by the high price and small stocks of turpentine. For some reasons the export demand for rosins and turpentine has been large this season and stocks are light and turpentine prices firmly held at around 90 cents a gallon in tank cars. The Standard Oil Co. is stated to have about 50 per cent of the business in this territory, the Sun Oil Co. 25 per cent and other distributors divide the remainder.

Distillates Quiet

Distillates for domestic heaters are very quiet. Some believe the colder weather of the first couple of days will bring in orders but the majority of jobbers will be careful not to get caught with stocks on hand to carry over until next October. There is a lot of inquiry for shipping instructions and the refiners are as anxious to get rid of their special stocks as the jobbers are to avoid ordering. Theoretically the distillate season extends from the beginning of October to the end of March but the weather man has a good deal to say regarding the amount consumed during the first and last of these two months. Some scientist has figured out that the heat from the sun has been below normal for two years but is now approaching normal and the earth as a whole may expect warmer weather this year than the last two years. If he is right, we may hope for a good gasoline summer but not for a good distillate winter. The distillate demand is so light that prices for new business are almost nominal but the quotations are somewhat lower than they have been, ranging from 3¾ to 4 cents.

Gas Oil Easy

Gas oil has failed to hold its recent show of a better tone and is rather easy with prices for all kinds of gas oil, light dark or low cold test offered at 3¾ cents. The demand is light. Some refiners have stated in response to inquiries they had no more gas oil to sell but were buyers themselves but there is more than enough to be had. The demand is simply showing a seasonable falling off.

Fuel Oil Off

There is little new demand for fuel oil and the market has eased off although the refinery prices are in several cases maintained at least ostensibly. One refiner has cut its price to $1.20 a barrel and the market is not over $1.25 to $1.30. There are a number of contracts in force that call for considerable oil at higher prices and the contracts on crude are turning out advantageously to the refiner rather than to the buyer. The steel companies are buying cautiously and some of the largest users are ordering in small lots from time to time as they need the fuel. One large steel company has brought out a new idea and is charging back freight paid on deliveries on a claim regarding the loading temperatures of the oil and having failed to maintain the point is now trying to frame some sort of a clause in the specifications that will reduce all these temperature variations to the buyer's advantage. By so doing it may find it has limited its possible source of supplies. At least two selling organizations have been handed claims for several hundred dollars each. Smackover fuel oil is firmly held at the old prices based very largely on contracts made before the recent crude advances. The sellers predict higher prices but with plenty of refinery fuel oil available the consumers will not worry.

Lubs Unchanged

Lubricating oils show no material change in conditions. Prices of viscous neutrals and bright stocks are higher as well as steam cylinder stocks. The demand from the jobbers has been active. There is only a comparatively small amount of new business being booked by refiners but most state they are well supplied with orders for some time and are not seeking more business at old prices. The export demand is said to be steady.

In regard to exports of petroleum products one prominent maker of automobiles stated this week, that the shipments of cars to South America was going on at a very great rate, competing with his European business which was large and that the gasoline demand from both South America and Europe should show a good increase due to the added number of cars in use in these continents. He stated in regard to the American demand that the replacement business could be counted on to give makers a steady business but they did not look for a large addition to the number of private car owners this year. If they did get many orders for cars from new owners it would be an agreeable surprise.

Tank Wagon Markets

Tank wagon markets have shown no change. Reports are received some larger companies of local cutting of prices but for the present at least the idea is to shut the eyes to these cuts and to hope that when the spring demand comes there will be less of this price cutting, which is due in a great measure to the excess of competition for business more than any desire to unsettle the market. Estimates of the probable excess of domestic consumption during the coming year over 1924 range from 10 to 15 per cent, among the best posted men in the industry. They decry as bad for all the tendency of some to overestimate the consumption and suggest that percentages of such a large total volume as was sold last year are hard to maintain and that every year of increased consumption will lower the percentage of gain made. The gain during February over the same month of 1924 is estimated by the leading distributors with headquarters in Chicago at around 8 to 10 per cent over February, 1924, and the comment is that this is "not so good." as the business done during that month in 1924 was decreased by severe cold and deep snows. Possibly final figures will show a little increase but the fact is that February is the bad month of the year and nothing can change it. Of course, the three days' decrease as compared with January and March make comparisons except on the basis of the daily average a poor one.

The distributing trade is still very optimistic of a good business during the season and hopes for a stable market. The evil of overexpansion in the number of filling stations is still serious and some oil men are looking for mergers to radically reduce the number. In some towns the number of stations has been quadrupled and there is nothing in present conditions to promise rapid increases in the population outside of the big cities. This fact is shown by housing conditions. Winter is now officially supposed to be at an end and with March the spring months are entered and all should look forward to spring business rather than back at February's possible lack of business.

CALIFORNIA RECEIPTS AND PETROLEUM IMPORTS

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended February 21 totaled 444,000 bbls., a daily average of 63,429 bbls., against 333,000 bbls., a daily average of 47,571 bbls. for the week ended February 14.

	Wk. ending Feb. 21
At Atlantic Coast Ports—	
New York	287,000
Philadelphia	76,000
Others	81,000
Total	444,000
Daily average	63,429
At Gulf Coast Ports—	
Total Atlantic and Gulf Coast Ports	444,000
Daily average	63,429

According to figures collected by the American Petroleum Institute imports of crude and refined oils at the principal ports for the week ended February 21 totaled 1,141,000 bbls., a daily average of 163,000 bbls., compared with 1,342,000 bbls., a daily average of 191,714 the week ended February 14.

	Wk. End. Feb. 21
At Atlantic Coast Ports—	
Baltimore	62,000
New York	181,000
Philadelphia	120,000
Others	194,000
Total	557,000
Daily average	79,571
At Gulf Coast Ports—	
Galveston district	315,000
New Orleans and Baton Rouge	130,000
Port Arthur and Sabine district	56,000
Tampa	26,000
Total	584,000
Daily average	83,429
At All U. S. Ports—	
Total	1,141,000
Daily average	163,000

EASTERN REFINED MARKETS FIRM THOUGH GASOLINE ADVANCE DELAYED

By N. O. Fanning

NEW YORK, Feb. 28.—Firmness prevailed in the eastern refined oil markets during the past week. Although expected gasoline advances failed to materialize, reports that additional increases will come in the next few weeks persist. Much of this sort of rumor is doubtless based upon overenthusiasm, but despite this there are actual existing factors making toward higher prices, in the belief of leading oil men.

No doubt the situation as to gasoline is more favorable than that of any other product, with the possible exception of fuel oils. During the past week spring weather has prevailed in this section and automobiles have been out in full force. The time has passed when cars are put up for the winter. Only in the worst weather do persons keep their cars in garages. They have ceased to be mere pleasure vehicles, but are a part of the daily life of a very large number of people. Of course commercial cars, the number of which is steadily increasing, are always being used, be the weather good or bad.

Although the early part of February was unfavorable, so far as weather conditions were concerned, the good weather in the last week and a half has made up for it, especially since weather conditions were ideal for motoring over the recent two-day holiday.

The natural result has been a greater depletion of stocks at refiineries than was expected. Although there will be a considerable gain in total stocks during February, due to the speeding up of production operations, the situation as to gasoline is characterized as unusually strong. The industry will not face the spring with nearly as large stocks as expected. While there is plenty of gasoline to take take care of ordinary requirements, refiners state that in the event of unusually good weather this spring and a fair export demand, prices will go much higher.

No Price Wars

One of the most favorable indications of the situation existing in the eastern markets is the absence of price wars. This is taken as an indication that stocks of gasoline are in strong hands, and that the increase in prices has not brought in a flood of the product from the inland refining centers to be sold at low prices. One reason is that the large companies have been heavy buyers of gasoline from independents who have recently been responsible for invading the eastern market with low-priced gasoline.

Kerosene Soft

Despite the strength in other petroleum products, kerosene, after temporary firmness, has turned soft again. In spite of this some interests expect a rise in prices in the near future.

The best explanation of the fact that kerosene prices have not advanced in the east since January 1 is that the demand has not been up to expectations, while increased refinery operations have resulted in a steady piling up of stocks of the product. Consequently, there seems to be no particular reason why the price should advance at this time. It is difficult to explain, however, why kerosene has advanced in other sections of the United States and abroad, and not here, for the higher price elsewhere could be expected to result in an outflow from this district.

Some oil men believe that kerosene will have a less important place in the oil scheme in the future, and that the gravity of oils now used for that purpose will have to find other outlets. The export market for kerosene has long been a big factor in determining the price, and even this has not recently improved to an extent which would take up the surplus stocks.

As a result of the big stocks of kerosene now on hand, and failure of consumption to improve to any extent, the Bayonne price has weakened somewhat. Prime white is obtainable as low at 7½ cents per gallon in bulk for export. More business is being done at this figure, the higher quotation of 9 cents having proved an impediment to the free movement of the product.

Gas Oil Quiet

Little activity is reported in the gas oil market. Local consumers are expected to come into the market in a month or two, however.

Fuel Oil Firm

Both Diesel oil and bunker fuel oil are firm, with consumption holding up to expectations. Big imports of topped oil in recent weeks have put the local industry in a position to supply all current requirements, and any further increase in quotations is not expected.

Export Market Improves

The New York oil export market has shown considerable improvement as to demand, but no change in prices. Bulk shipments of both gasoline and kerosene were large. The Standard Oil Co. of New Jersey dispatched a cargo of 3,257,383 gallons of gasoline to its German subsidiary. Another bulk shipment of gasoline consisted of 1,224,255 gallons to Holland.

Tanker Chartering

The oil tanker chartering market continued active during the past week. The high rate of activity displayed by the market this year is said to be a reflection of the higher prices for oil in the United States, which has encouraged buying in cargo lots by independent European distributors. It is said that as soon as word reaches one of these distributors that the market is about to go up they dispatch a vessel to an American port with orders to pick up a cargo for immediately delivery at the old price. Vessels used in this way are usually chartered for a single trip.

New fixtures include:

Tanker Burnwell (Am.), March loading, Gulf port to north of Hatteras, crude oil, 30 cents.

Tanker Alpha (Dan.), crude, Gulf port to Denmark.

Tanker Carolina (Ital.), March loading, cased oil, Port Arthur to east coast South America, at 27 cents.

Tanker W. F. Burdell (Am.), March loading, crude oil, Gulf to north Hatteras, 30 cents.

Exports From New York

The following table shows principal exports of petroleum and petroleum products from New York reported during the past three weeks (figures in gallons unless otherwise stated in parentheses):

Item, How Shipped—	Week Ended Feb. 25	Feb. 18	Feb. 11
Gasoline:			
Bulk	4,481,638	727,105	.....
Cases	1,363,860	1,479,880	1,142,960
Kerosene:			
Bulk	1,952,471	2,978,530	.....
Cases	1,168,000	3,396,570	1,228,280
Fuel oil:			
Bulk	.....	.....	269,063
Barrels	1,529,350	998,000	1,519,550
Cases	19,200	170,430	97,170
Lub. grease:			
Barrels (bbls.)	665	.....	4,422
Paraffin wax:			
Bags (lbs.)	1,345,520	908,160	937,200
Barrels (bbls.)	.....	.....	2,541
Crude oil:			
Barrels (bbls.)	6,580	2,585	5,800

Barrel exports of lubricating oil increased materially during the week ended February 25, being reported at 1,529,350 gallons. Paraffin wax shipments also improved, amounting to 1,345,520 pounds. Crude oil exports aggregated 6,580 bbls.

Oil Imports Gain

The feature of oil receipts by water at Atlantic ports during the week ended February 25 was the importation of an average of 204,000 bbls. daily, largely from Mexico but including about 24,000 bbls. daily from Venezuela and Peru, combined.

Large imports of oil have featured the water movement of oil this year. During January they averaged 133,000 bbls. a day. During the last three weeks they have averaged 153,000 bbls. a day. This gain is attributed to the improved demand for bunker oil and Diesel oil at Atlantic seaboard ports, and the scarcity and comparatively high cost of heavy California oil, a large quantity of which was shipped to the Atlantic Coast last year.

The following table shows estimated daily average receipts of crude and refined oil by water at Atlantic Coast ports from Gulf and Pacific Coasts of the United States, and imports, for the last three weeks; also monthly record for the last 12 months (figures in barrels):

	Week Ended Feb. 25	Feb. 18	Feb. 11
Gulf Coast	214,000	316,000	277,000
Pacific Coast	99,000	37,000	42,000
Imports	204,000	90,000	166,000
Total	517,000	443,000	485,000

Daily Averages by Months

	Gulf	Pacific	Imports	Total
Jan., 1925	311,900	77,000	133,000	521,000
Dec., 1924	306,000	83,000	85,000	474,000
November	246,000	80,000	150,000	476,000
October	246,000	120,000	88,000	454,000
September	270,000	104,000	101,000	475,000
August	310,000	127,000	84,000	521,000
July	318,000	85,000	114,000	517,000
June	302,000	133,000	136,000	571,000
May	276,000	122,000	144,000	542,000
April	262,000	143,000	123,000	528,000
March	201,000	137,000	130,000	468,000
February	174,000	175,000	108,000	457,000

The above estimates are based on capacity of incoming oil-laden vessels.

CONTINUOUS TYPE OF PRESSURE PROCESS

(Continued from Page 109)

itial low investment cost. It is hard to assay this situation as a whole; but the estimate that the best balanced of the modern continuous feed processes represents a saving of investment charges of at least 33⅓ per cent over the equivalent capacity of simple pressure distillation equipment is probably a conservative statement.

On the question of operating charges, the simple pressure still is a bad offender from a fuel consumption standpoint. On the basis of using fuel oil exclusively for heating, which makes the simplest comparative basis, the straight pressure still will consume an average of 25 per cent on the gasoline produced. A figure as low as 10 per cent has been attained with good furnace construction on some of the continuous type processes, but on the other hand a figure of 30 per cent is reported for one process in general use. The fact that the continuous processes as a rule produce per unit from two to four times the amount of gasoline per day that is produced by the straight pressure distillation processes would indicate a saving in labor charges as well, but the standardization of pressure still operation in large plants has gone to such lengths and has resulted in such savings of labor that there is little or nothing to be gained in this direction.

Computing Costs

Any attempt to compare the several competitive types of continuous feed cracking processes now in wide use is rendered exceedingly difficult at the outset by the fact that there is no uniformity in the methods used in reporting costs, capacities and yields. The matter of oroginal cost of a cracking unit complete, exclusive of lands and tankage, gives the least difficulty, since there is the least possibility here of confusion. An approximate range of cost for the continuous type systems on this basis is $75,000 to $200,000 per unit, depending upon the type of unit constructed, the number constructed, and the location. With regard to capacities, confusion at once enters through the circumstance that the cycling of heavy distillates produced in the operation is accomplished in so many different ways and to such a widely varying extent that anything but a careful analysis of the operation of a unit may lead to ridiculous results. Two plants operating the same type of process on the same stock will report in one instance a capacity of 500 bbls. per day and in the other a capacity of 1,500 bbls. per day. One of them is reporting only net consumption of cracking stock, while the other is reporting total oil processed. Further difficulty arises from the fact that the natural tendency of the exploiters of cracking processes is to make figures sound as large as possible, and the ratings are therefore expressed in terms of capacity while "on stream," which is obviously of no significance unless it is known what proportion of the year the unit will be "on stream." This involves the two factors of the time required for the ordinary turn around at the end of the run and the proportion of time off for repairs.

A fairly large range of information on this subject indicates that the true capacity of most of the continuous cracking processes expressed on a yearly basis should be taken as about 75 per cent of the stated capacity while "on stream."

Grades of Gasoline

Another obvious difficulty in comparing results is the elastic use of the term "gasoline." It is sufficient to indicate the difficulty here to state that the range between the better grades of gasoline actually marketed in the United States and the products which are sometimes called "gasoline" as produced from cracking equipment may be as much as 50 per cent from a yield standpoint, that is, it is possible to recover from pressure distillate two parts of the first grade of gasoline or three parts of a product which, when blended with casinghead or heavy naphtha, or natural run products may be sold as gasoline of a lower standard of quality. This ambiguity of the meaning of the word "gasoline" in itself renders very difficult any accurate comparison between the different types of competitive continuous cracking processes.

Some further confusion in an effort to compare or obtain exact information on the performance of the continuous feed processes arises from the fact that in many instances the gas produced in the operation is fired in the furnace without metering or accounting of any description, and the fuel figures given are only those of the supplemental fuel oil burned, which may be little or nothing. One is reminded of the old time refinery practice in this respect, where gas and coke produced from coking of crude was burned at stills or in boiler houses without metering or charge, the result being that the fuel charge against cost of distillation steam showed on the books as nothing or less.

Yield of Products

Another factor upon which it is difficult to secure published information from any authoritative sources is as to the total yield of liquid products from the cracking processes, that is, the shrinkage in volume due to formation of gas and coke. The simple distillation process is excellent in this respect, since when the condensation operation is conducted under pressure and under the best conditions the expansion in volume of the cracked products may be sufficient to entirely offset the gas and coke production, so that the actual yield of liquid products of the cracking operation is 100 per cent of the charging stock. Some of the newer continuous processes are bad offenders in this respect, giving high shrinkage losses. The general range is from 3 per cent to as high as 20 per cent.

Considering the situation as a whole, the continuous feed processes represent a considerable advance from a technical standpoint over the simple distillation process, but the difference is far less than might be supposed from a superficial comparision of the two. A well designed large simple pressure distillation plant will give considerably better results than a medicore continuous type process under unskilled management.

Legal Angles

The legal situation at the present time has two angles:

First, the patent controversies between the various owners of cracking processes; and

Second, the effort of the Government to set aside the system of licensing and cross-licensing agreements under which the cracking industry has grown up and reached its present status.

The more important of the patent controversies in the industry itself are those involving the Standard Oil Co. of Indiana, the Universal Oil Products Co., and The Texas Co. The suit instituted against the Standard Oil Co. of Indiana by the Universal Oil Products Co. under the Dubbs patent in 1916 may be expected to reach the United States District Court

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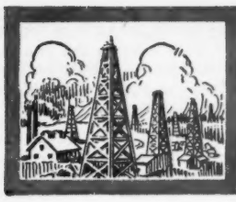


REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

	Mar. 3		Feb. 24		Feb. 17	
OKLAHOMA (Group 3)—						
50-52 450 end point (Naphtha)	.11¼	.11½	.12¼	.12½	.12½	.12¾
56-58 450 end point	.11¾	.12	.12¾	.13	.13	.13¼
58-60 437 end point (U. S. Motor)	.12	.12¼	.13	.13¼	.13¼	.13½
60-62 400 end point	.13¾	.14¼	.14½	.14¾	.14¾	.15
64-66 375 end point	.15	.15½	.15¾	.16	.16	.16¼
68-70 350 end point	.15½	.15¾	.16¼	.16½	.16¼	.16½
KANSAS—						
58-60 437 end point (U. S. Motor)	.12½	.12¾	.13¼	.13½	.13½	.13¾
NORTH TEXAS—						
48-52 450 end point (Naphtha)	.11	.11¼	.12	.12¼	.12¼	.12½
50-52 440 end point (Naphtha)	.11¼	.11½	.12¼	.12½	.12½	
56-58 450 end point	.11¾	.12	.12½	.12¾	.13	.13½
58-60 437 end point (U. S. Motor)	.12	.12½	.13	.13½	.13½	.13¾
60-62 400 end point	.14	.14¼	.14½	.14¾	.14¾	.15
64-66 390 end point	.15	.15¼	.16		.16	.16¼
64-66 375 end point	.15¼	.15¾	.16	.16¼	.16¼	.16½
68-70 360 end point	.15¼		.16¼	.16½	.16½	.16¾
NORTH LOUISIANA—						
56-58 450 end point	.11¾	.12	.12½	.13	.12½	.13
58-60 437 end point (U. S. Motor)	.12¾	.13	.13¼	.13½	.13¼	.13½
60-62 400 end point	.13¾	.14	.14½	.14¾	.14½	.14¾
64-66 390 end point	.16	.16¼	.15½	.15¾	.15¾	.16
64-66 375 end point	.16¼	.16½	.16½	.16¾	.16¾	.17
ARKANSAS—						
58-60 450 end point	.12½	.13	.13½	.13¾	.14	.14¼
58-60 437 end point (U. S. Motor)	.13	.13½	.13¾	.14	.14¼	.14½
64-66 375 end point	.16	.16¼	.16¾	.17	.17¼	.17½
ROCKY MOUNTAIN STATES—						
*58-60 437 end point (U. S. Motor)	.15¾	.16	.16¼	.16½	.16¼	.16½
PENNSYLVANIA—						
52 Naphtha	.14¼		.14½		.14½	
54 Naphtha	.14½		.14¾		.14¾	
56 Gasoline	.14¾		.15¼		.15¼	
58 Gasoline	.15		.15¾		.15¾	
60 Gasoline	.15½		.16¼		.16¼	
62 Gasoline	.16		.16½		.16½	
64 Gasoline	.16½		.17		.17	
66 Gasoline	.18		.18½		.18½	
68-70 Gasoline	.18½		.19		.19	
CALIFORNIA—						
54-56 437 end point (U. S. Motor) domestic	.11	.11½	.11	.11½	.11	.11½
CHICAGO DIST. (Based on Group 3)—						
50-52 450 end point (Naphtha)	.12		.12¼	.12½	.12½	.13
56-58 450 end point	.12	.12¼	.12½	.13	.12¾	.13
58-60 437 end point (U. S. Motor)	.12½	.13	.13	.13¼	.13¼	.13½
60-62 400 end point	.14¼	.14½	.14½	.14¾	.14½	.15
64-66 375 end point	.15¼	.15¾	.15¾	.16	.16¼	.16½
68-70 360 end point	.16	.16½	.16¼	.16½	.17	.17¼

*Colorado points.

NATURAL GASOLINE

	Mar. 3		Feb. 24		Feb. 17	
OKLAHOMA (Group 3)—						
Grade Double A, 80-87.9, 375 e.p., rec. 90%	.12¼	.12½	.13	.13¼	.13	.13½
Grade A, 72-79.9, 375 end point, rec. 90%	.12¼	.12½	.13¼		.13	.13½
Grade Double B, 84-92, 375 e.j., rec. 95%	.11¼	.11½	.12¼	.12½	.12¼	.12½
Grade B, 76-83.9, 375 end point, rec. 85%	.11¼	.11½	.12¼	.12½	.12¼	.12½
Grade C, 80-90, 375 end point, rec. 78%	.10½	.10¾	.11½	.11¾	.11½	.11¾
NORTH TEXAS—						
Grade Double A, 80-87.9, 375 e.p., rec. 90%	.12	.12¼	.13	.13¼	.13	.13¼
Grade A, 72-79.9, 375 end point, rec. 90%	.12	.12¼	.13	.13¼	.13	.13¼
Grade Double B, 84-92, 375 e.p., rec. 85%	.11	.11¼	.12	.12½	.12¼	.12¾
Grade B, 76-83.9, 375 end point, rec. 85%	.11	.11¼	.12	.12½	.12¼	.12¾
Grade C, 80-90, 375 end point, rec. 78%	.10½	.10¾	.11½	.11¾	.11½	.11¾
NORTH LOUISIANA—						
Grade A, 72-79.9, 375 end point, rec. 90%	.13½	.13¾	.15		.15	
Grade B, 76-83.9, 375 end point, rec. 85%	.12½	.12¾				
Grade C, 80-90, 375 end point, rec. 78%	.12	.12¼	.13		.13	
CALIFORNIA—						
68-80 absorption, 360-390 end point	.13½	.14	.13½	.14	.13½	.14
78 84 compression, 350 end point	.13¾		.13¾		.13¾	
CHICAGO DIST. (Based on Group 3)—						
Grade Double A, 80-87.9, 375 e.p., rec. 90%	.12½	.12¾	.13	.13½	.13	.13½
Grade A, 72-79.9, 375 end point, rec. 90%	.12½	.12¾	.13½	.13½	.13½	.13½
Grade Double B, 84-92, 375 e.p., rec. 85%	.11½	.11¾	.12½	.12½	.12½	.12½
Grade B, 76-83.9, 375 end point, rec. 85%	.11½	.11¾	.12¼	.12½	.12½	.12¾
Grade C, 80-90, 375 end point, rec. 78%	.10¾	.11	.11	.11¾	.11¾	.12

MOTOR NATURAL GASOLINE (BLEND)

	Mar. 3		Feb. 24		Feb. 17	
OKLAHOMA (Group 3)—						
60-62 450 end point	.11¾	.12	.12¾	.13	.12¾	.13
64-66 437 end point	.11¾	.12	.13		.13	
68-70 430-435 end point	.11¾	.12	.13		.13	
NORTH TEXAS—						
58-62 440 end point	.11¾	.12	.12¾	.13	.12¾	.13
58-60 450 end point	.11¾	.12	.13		.13	
PENNSYLVANIA—						
*60-62	.15½		.15½		.15½	
*64 68	.15½		.15½		.15½	
*66-68	.15¾		.15¾		.15¾	
*68-70	.15¾		.15¾		.15¾	
CHICAGO DIST. (Based on Group 3)—						
60-62 450 end point	.12	.12¼	.12½	.13	.12¾	.13
64-66 450 end point	.12	.12¼	.12¾	.13	.12¾	.13
68-70 437 end point	.12¼	.12½	.13¼	.13½	.12¾	.13¼

*At Sistersville, W. Va.

BURNING OIL

	Mar. 3		Feb. 24		Feb. 17	
KANSAS—						
41-43 water white Kerosene	.05¼	.05½	.05½	.05¾	.05½	.05¾
NORTH LOUISIANA—						
41-43 prime white Kerosene	.05¾	.06	.05¾	.06	.05	.06¼
42-44 water white Kerosene	.06	.06¼	.06	.06¼	.05¼	.05½
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.04¾	.05	.04¾	.05	.04¾	.05¼
42-44 water white Kerosene	.05	.05¼	.05¼		.05¼	.05½
40-41 prime white Kerosene	.04½	.04¾	.04¾	.05⅞	.04¾	.04¾
ROCKY MOUNTAIN STATES—						
*40-42 water white Kerosene	.07¾	.08	.07¾	.08	.07¾	.08
NORTH TEXAS—						
41-43 water white Kerosene	.04¾	.05	.04¾	.05	.04¾	.05
40-42 prime white Kerosene	.04½	.04¾	.04½	.04¾	.04½	.04¾
41-43 prime white Kerosene	.04½	.04¾	.04½	.04¾	.04½	.04¾
42-44 water white Kerosene	.05	.05¼	.05	.05¼	.05	.05¼
ARKANSAS—						
41-43 water white Kerosene	.05½	.05¾	.05½	.05¾	.05¾	.06
42-44 water white Kerosene	.05¾	.06	.05¾	.06	.06	.06¼
PENNSYLVANIA—						
43 Kerosene prime white	.07½		.07½		.07½	
45 Kerosene water white	.07⅞		.07¾		.07¾	
46 Kerosene water white	.08		.08¼		.08¼	
47 Kerosene water white	.08½		.08¾		.08¾	
34 Neutral	.08¾		.08¾		.08¾	
34 Sundebloomed Neutral	.10		.10		.10	
36 Miners' Neutral	.08		.08		.08	
300 Mineral Seal	.08		.08		.08	
CALIFORNIA—						
40-42 water white (high burning test)	.07½	.08	.07½	.08	.07¼	.08
Engine distillate, 43-45 445 end point	.08½	.09	.08½	.09	.08½	.09
Engine distillate, 42-44 480 end point	.07¾	.08	.07¾	.08	.07¾	.08
CHICAGO DIST. (Based on Group 3)—						
41-43 water white Kerosene	.04¾	.05	.05	.05¼	.04¾	.05
42-44 water white Kerosene	.05	.05¼	.05¼	.05½	.05	.05¼

*Colorado points.

FUEL OILS

	Mar. 3		Feb. 24		Feb. 17	
KANSAS—						
24-26 Fuel Oil	1.40	1.45	1.45	1.50	1.45	1.50
32-36 Gas Oil	.03¾	.03⅞	.03¾	.03⅞	.03¾	.03⅞
38-40 Distillate	.03⅞	.04	.04		.04	.04¼
OKLAHOMA (Group 3)—						
22-26 Fuel Oil (sellers' cars)	1.20	1.22½	1.27½	1 30	1.27½	1.32½
24-26 Fuel Oil (buyers' cars)	1.20		1.25	1.30	1.27½	1.32½
24-26 Fuel Oil (sellers' cars)	1.20	1.25	1.30		1.30	1.35
28-30 Fuel Oil (sellers' cars)	1.30		1.35	1.40	1.40	1.45
32-36 Gas Oil	.03½	.03⅝	.03¾	.03⅞	.03¾	.03⅝
36-38 Distillate	.03¾		.03¾	.03⅞	.03¾	.03⅝
38-40 Straw distillate	.03¾	.03⅞	.03⅞	.04	.04	
NORTH TEXAS—						
24-26 Fuel Oil (sellers' cars)	1.35		1.40	1.45	1.40	1.45
26-30 Fuel Oil	1.40	1.45	1.45	1.50	1.45	1.50
32-36 Gas Oil	.03⅝	.03¾	.03¾	.03⅞	.03¾	.03⅝
36-38 Distillate	.03¾	.03⅞	.03¾	.03⅞	.03¾	.03⅝
38-40 Straw distillate	.03⅞	.04	.04		.04	
NORTH LOUISIANA—						
18-20 Fuel Oil	1.25	1.30	1.30	1.35	1.30	1.35
32-36 Gas Oil	.03⅞	.04	.04		.04	
ARKANSAS—						
38-40 Distillate	.04	.04¼	.04	.04¼	.04¼	
32-36 Gas Oil	.04		.04		.04	.04¼
22-26 Refinery Fuel Oil	1.30		1.30		1.30	1.35
GULF COAST (South Texas)—						
Gas Oil	.05	.05½	.05	.05½	.05	.05½
Fuel Oil	1.70	1.80	1.70	1.80	1.70	1.80
PENNSYLVANIA—						
30-34 Fuel Oil	.06¼		.06¼		.06¼	
36-40 Fuel Oil	.07		.07		.07	
CALIFORNIA—						
33-36 Distillate	.04¾	.05	.04¾	.05	.04¾	.05
27-33 Distillate	.04½	.04¾	.04½	.04¾	.04½	.04¾
15-20 Fuel Oil (at tide water)	1.60	1.65	1.60	1.65	1.60	1.65
CHICAGO DIST. (Based on Group 3)—						
24-26 Fuel Oil (sellers' cars, Group 3)	1.22½	1.27½	1.30	1 35	1.30	1.35
22-24 (El Dorado)	1.25	1.30	1.30	1.35	1.30	1.35
18-20 (Smackover)	1.25	1.30	1.25	1.30	1.25	1.30
32-36 Gas Oil	.03⅝	.03¾	.03¾	.03⅞	.03¾	.04
36-38 Distillate	.03¾	.04	.03¾	.03⅞	.03¾	.03⅝
38-40 Straw distillate	.03⅞	.04	.03⅞	.04	.03⅞	.04

LUBRICATING OILS AND WAX

	Mar. 3		Feb. 24		Feb. 17	
OKLAHOMA (Group 3)—						
Neutrals:						
70-80 vis., 2½ color, 20-25 cold test			.07	.07½	.06	.06½
100 vis., 2 color, 20-25 cold test	.08½	.09	.08½	.09	.07½	.08
100 vis., 3 color, 20-25 cold test	.08	.08½	.08	.08½	.07	.07½
150 vis., 3 color, 20-25 cold test	.10¼	.11	.09½	.10	.08½	.09
150 vis., 4 color, 20-25 cold test	.10¼	.10¾	.09¼	.09¾	.08¼	.08¾
180 vis., 4 color, 23-28 cold test	.10¾	.11¼	.10	.10½	.09	.09¼
180 vis., 3 color, 23-28 cold test	.11	.11½	.10¼	.10¾	.09¼	.09¾
200 vis., 3 color, 23-28 cold test	.12	.12½	.11¾	.12¼	.10¾	.11¼
200 vis., 4 color, 23-28 cold test	.11¾	.12¼	.11½	.12	.10¼	.11
220 vis., 3 color, 25-30 cold test	.12	.12½	.14	.14½	.13	.13½
220 vis., 4 color, 25-30 cold test	.13½	.14	.13¼	.14	.12¼	.13
240 vis., 3 color, 25-30 cold test	.16	.16½	.15½	.16	.14½	.15
240 vis., 4 color, 25-30 cold test	.15½	.16	.15	.15½	.14	.14½
280 vis., 3 color, 25-30 cold test	.17½	.18	.18½	.19	.17½	.18
280 vis., 4 color, 25-30 cold test	.16½	.17	.17½	.18	.16½	.17
Red Neutrals:						
180 vis., 5 color, 23-28 cold test	.10½	.11	.09¾	.10¼	.08¾	.09¼
180 vis., 6 color, 23-28 cold test	.14½	.15	.14½	.15	.13½	.14
200 vis., 5 color, 23-28 cold test	.11½	.12	.11¼	.11¾	.10¼	.10¾
200 vis., 6 color, 23-28 cold test	.15½	.16	.15½	.16	.14½	.15
220 vis., 5 color, 25-30 cold test	.13½	.14	.13	.13½	.12	.12½
220 vis., 6 color, 25-30 cold test	.17¼	.17¾	.17¼	.17¾	.16¼	.16¾

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

240 vis., 5 color, 25-30 cold test	.15	.15½	.14½	.15	.13½	.14
240 vis., 6 color, 25-30 cold test	.18¼	.18¾	.18¼	.18¾	.17¼	.17¾
280 vis., 5 color, 25-30 cold test	.15½	.16	.16½	.17	.15½	.16
Cylinder Stocks—						
180-200 vis., S. R. green, 40-45 cold test	.10½	.11	.10½	.11	.10½	.11
180-200 vis., S. R. green, 40-45 cold test	.10	.10½	.10	.10½	.10	.10½
170-190 dark green, 40-45 cold test	.08	.09	.08	.09	.08	.09
600, E filtered	.21¾		.21½	.22½	.20½	.21½
190-200 vis. @ 210 "D" Bright Stock	.36		.36		.35	
200-210 vis. @ 210 "E" Bright Stock	.31		.31		.30	
150 vis. @ 210 "D" Bright Stock	.32		.32		.31	
150 vis. @ 210 "E" Bright Stock	.28		.28		.27	
Waxes:						
124-126 White Crude Scale Wax	.05	.05¼	.05⅛	.05¼	.05¼	.05⅝
PENNSYLVANIA—						
150, 3 color	.22		.22		.22	
180, 3 color	.24½		.24½		.24½	
200, 3 color	.26		.26		.26	
220, 3 color	.28½		.28½		.28½	
600, steam refined	.23½		.23½		.23½	
635, steam refined	.28½		.28½		.28½	
650, steam refined	.31		.31		.31	
600, Pennsylvania flash	.35		.35		.35	
650, Pennsylvania flash	.40		.40		.40	
*550, E filtered	.24		.24		.24	
*600, E filtered	.27½		.27½		.27½	
600, E filtered	.26½		.26½		.26½	
600, D filtered	.32½		.32½		.32½	
550, E filtered	.23		.23		.23	
550, D filtered	.27		.27		.27	
Pensylvania Bright Stock	.40½		.40½		.40½	
122-124 White Crude Scale Wax	.05⅝		.05⅝		.05⅝	
†122-124 White Crude Scale Wax	.05⅞		.05⅞		.05⅞	

*At Warren, Pa. †At New York City.

GULF COAST (South Texas)—						
Zero Black	.07	.08	.07	.08	.07	.08
No. 2 color, 100 vis., pale oil	.10½	.11½	.10½	.11½	.10½	.11½
No. 2 color, 150 vis., pale oil	.12	.13	.12	.13	.12	.13
No. 3 color, 200 vis., pale oil	.15	.16	.15	.16	.15	.16
No. 3 color, 300 vis., pale oil	.17	.18	.17	.18	.17	.18
No. 3½ color, 500 vis., pale oil	.19	.20	.19	.20	.19	.20
No. 3½ color, 750 vis., pale oil	.24½	.25½	.24½	.25½	.24½	.25½
No. 4½ color, 1200 vis., pale oil	.27½	.28½	.27½	.28½	.27½	.28½
No. 4½ color, 2000 vis., pale oil	.31	.32	.31	.32	.31	.32
No. 2 plus color, 150 vis., pale filtered	.23½		.23½		.23½	
No. 2 plus color, 200 vis., pale filtered	.25		.25		.25	
No. 2½ minus color, 300 vis., pale filtered	.28½		.28½		.28½	
No. 2½ color, 500 vis., pale filtered	.32½		.32½		.32½	
No. 2½ color, 800 vis., filtered	.42½		.42½		.42½	
No. 5 to 6 color, 200 vis., red oil	.13½	.14½	.13½	.14½	.13½	.14½
No. 5 to 6 color, 300 vis., red oil	.15½	.16½	.15½	.16½	.15½	.16½
No. 5 to 6 color, 500 vis., red oil	.17½	.18½	.17½	.18½	.17½	.18½
No. 5 to 6 color, 750 vis., red oil	.22½	.23½	.22½	.23½	.22½	.23½
CALIFORNIA—						
200 vis., 2½-3 color	.14½	.15½	.14½	.15½	.14½	.15½
300 vis., 2 -4 color	.16	.17	.16	.17	.16	.17
350 vis., 3½-4 color	.17½	.18½	.17½	.18½	.17½	.18½
400 vis., 4 -4½ color	.19	.20	.19	.20	.19	.20
Red Neutrals:						
200 vis., 4½-5 color	.13	.14	.13	.14	.13	.14
300 vis., 5 -6 color	.14	.15	.14	.15	.14	.15
400 vis., 5 -6 color	.16	.17	.16	.17	.16	.17
500 vis., 6 -6½ color	.17	.18	.17	.18	.17	.18
600 vis., 6½ plus color	.18	.19	.18	.19	.18	.19

Note: Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK DOMESTIC MARKET

Bayonne Refinery Prices:	Mar. 3	Feb. 24	Feb. 17
U. S. Motor Gasoline, 58-60 437	.18	.18	.17
*Bunker Oil, 14-16 Be.	1.80	1.80	1.80
*Diesel Oil, 28-30 Be.	2.70	2.70	2.70
Furnace Oil, New York City	.10	.10	.10
Gas Oil, 32-36 Be.	.06¾	.06¾	.06¾
41-43 Kerosene prime white	.07½	.09	.09

*Lighterage, 6.5c a barrel extra.

NEW YORK EXPORT PRICES

Motor Gasoline:	Mar. 3	Feb. 24	Feb. 17
58-60 Be. gravity, in cases	.30.15	.30.15	.30.15
U. S. Navy, in bulk	.16	.16	.16
Naphtha:			
60° F., 59-61 Be. gravity, in bulk	.18¾	.18¾	.18¾
60° F., 63-66 Be. gravity, in bulk	.20	.20	.20
60° F., 66-68 Be. gravity, in bulk	.21½	.21½	.21½
Kerosene:			
Standard white, 40-42 Be. grav., in bulk	.06½	.06½	.06½
Standard white, 40-42 Be. grav., in barrels	.13½	.13½	.13½
Standard white, 40-42 Be. grav., in cases	.16.9	.16.9	.16.9
Water white, 42-44 Be. grav., in bulk	.07½	.07½	.07½
Water white, 42-44 Be. grav., in barrels	.14½	.14½	.14½
Water white, 42-44 Be. grav., in cases	.17.9	.17.9	.17.9
†Lubricating Oils:			
Cylinder Stock, extra filtered, 600, in barrels	.46½	.46½	.46½
Cylinder Stock, light filtered, 600, barrels	.40½	.40½	.40½
No. 1 white neutral, .878 spec. grav.	.43	.43	.43
No. 1 Summer Black, .895 spec. grav.	.19	.19	.18
No. 5 Bright Stock, .897 spec. grav.	.50½	.50½	.50½
Special "A" red oil, .897 spec. grav., 170 vis.	.21	.21	.21
No. 2 red oil, .903 spec. grav., 212 vis.	.22	.22	.22
No. 1 red oil, .905 spec. grav., 265 vis.	.23	.23	.23
Polar red oil, .906 spec. grav., 295 vis.	.25	.25	.25
Pale oil, "25", .899 spec. grav.	.20½	.20½	.20½
Pale oil, "28", .892 spec. grav.	.16	.16	.16
Paraffin Wax:			
120-122 a.m.p., per lb.	.06¼	.06¼	.06¼
125-127 a.m.p., per lb.	.06⅜	.06⅜	.06⅜
130-132 a.m.p., per lb.	.06⅝	.06⅝	.06⅝
135-137 a.m.p., per lb.	.07½	.07½	.07½

†All lube prices in barrels.

LOS ANGELES EXPORT PRICES

	Mar. 3		Feb. 24		Feb. 17	
Kerosene water white	.05	.05½	.05	.05½	.05	.05½
U. S. Motor gasoline, 54-56, 437 end point	.10½	.11	.10½	.11	.10½	.11

CRUDE OIL PRICES

January 29.—The Sun Oil Co. posted a price of $1.20 for High Island crude.

Arkansas and North Louisiana

Caddo, 38° and above	$2.05
35° to 37.9°	1.95
32° to 34.9°	1.85
Below 32°	1.70
Homer, 35° and above	1.80
32° to 34.9°	1.70
31° to 32.9°	1.60
Below 31°	1.45
Haynesville, 33° and above	1.70
Below 33°	1.60
El Dorado, 33° and above	1.70
Below 33°	1.60
Bull Bayou, 38° and above	1.85
35° to 37.9°	1.70
32° to 34.9°	1.55
Cotton Valley	1.40
De Soto	1.90
Crichton	1.70
Bellevue	2.00
*Stephens, Ark:	
Below 26°	1.40
26° and above	1.60
Smackover:	
Below 25°	1.30
25° to 25°9°	1.40
26° to 26.9°	1.50
27° to 27.9°	1.55
28° and above	1.60

*Posted by Atlantic Oil Producing Co.

Wyoming and Montana

Rock Creek (Wyo.)	1.70
Salt Creek	1.60
Big Muddy	1.60
Mule Creek	1.25
Grass Creek (light)	2.00
Elk Basin	2.00
Lance Creek	1.95
Osage	1.95
Cat Creek (Mont.)	2.00
Sunburst (Mont.)	1.20
Lost Soldier	1.28
Greybull and Torchlight	2.00
Hamilton Dome	1.60
Hogback, N. Mex.	2.05

Lost Soldier and Lander based on contracts covering entire production of fields.

Oklahoma, Kansas, North and Central Texas

Prairie Oil & Gas Co. and other major purchasing companies, except as noted:

Below 30°	1.35
30° to 32.9°	1.55
33° to 35.9°	1.80
36° to 38.9°	2.00
39° to 41.9°	2.25
42° and above	2.35
Sinclair Crude Oil Purchasing Co.—	
39° to 41.5°	2.25
41.6° and above	2.35
Magnolia Petroleum Co.:	
Below 28°	1.00
28° to 30.9°	1.35
*31° to 32.9°	1.55
Corsicana light	2.00
Corsicana heavy	1.00
Mexia and Wortham	2.00
*33° gravity and above, same as Prairie.	

Humble Oil & Refining Co.

Powell, Currie, Richland	2.00
Mexia and Wortham	2.00
Moran crude:	
Below 30° gravity	1.35
30° to 32.9°	1.55
33° to 35.9°	1.80
36° and above	2.00

Ranger and North Texas, same as Prairie.

Gulf Coast

Grade "A"	2.00
Grade "B"	1.75
Luling (based on contracts) 90c and	1.15
Laredo (Magnolia Petroleum Co.)	.85
Rockdale-Minerva (Milam County)	1.25
Calliham (Live Oak-McMullen)	1.15
Webb, Jim Hogg, Zapata	1.00
*High Island	1.20

*Posted by Sun Co.

***Somerset**

Below 30°	1.25
30° to 32.9°	1.35
33° to 35.9°	1.80
36° to 38.9°	1.95
39° to 41.9°	2.10
42° and above	2.35

Posted by Grayburg Oil Co.

California

14° to 19.9°	$1.25
20° to 20.9°	1.27
21° to 21.9°	1.30
22° to 22.9°	1.33
23° to 23.9°	1.36
24° to 24.9°	1.40
25° to 25.9°	1.44
26° to 26.9°	1.48
27° to 27.9°	1.52
28° to 28.9°	1.56
29° to 29.9°	1.60
30° to 30.9°	1.64
31° to 31.9°	1.68
32° to 32.9°	1.72
33° to 33.9°	1.76
34° to 34.9°	1.80
35° and above	1.85

Rosecrans-Athens Field, only:

Below 35.9° gravity, same as other fields.	
36° to 36.9°	1.92
37° to 37.9°	2.00
38° to 38.9°	2.08
39° to 39.9°	2.16
40° to 40.9°	2.24
41° to 41.9°	2.32
42° and above	2.40

Eastern States

Penna Grade Oil in New York Transit Lines	3.85
Bradford District Oil in National Transit Lines	3.85
Penna Grade Oil in National Transit Lines	3.75
Penna Grade Oil in Southwest Pa. Pipe Lines	3.75
Penna Grade Oil in Eureka Pipe Line Lines	3.75
Penna Grade Oil in Buckeye Pipe Line Lines	3.75
Cabell Grade Oil in Eureka Pipe Line Lines	2.20
Corning Grade Oil in Buckeye Pipe Line Lines	2.25
Somerset Medium Oil in Cumberland Pipe Line Lines	2.30
Somerset Light Oil in Cumberland pipe Line Lines	2.45
Ragland Grade Oil in Cumberland Pipe Line Lines	1.30
Lima	2.33
Wooster	2.25
Illinois	2.12
Indiana	2.13
Princeton	2.12
Plymouth	1.65
Waterloo	1.20
†Oil Springs, Canada	2.80
†Petrolia, Canada	2.73
*Western Kentucky, 36° and above	2.05
*Western Kentucky, 33° to 35.9°	1.95
*Western Kentucky 32.9° and below	1.85
Cumberland, Barren and Monroe Counties (Kentucky), (Paragon Development Co.)	2.45

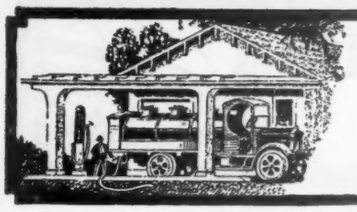
†Plus Government bounty of 26½c.

*Prices for Warren, Allen, Hancock, Simpson and Ohio Counties by Indian Refining Co.

Mexican Crude

*Tuxpam (f.o.b. Mexican ports)	$1.35
†Panuco (f.o.b. Mexican ports)	1.25
Tuxpam (New York)	1.90
Panuco (New York)	1.76

*Plus 33.00c tax. †Plus 20.00c tax.



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns, March 3.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

Main Service Station Price

	Gasoline Tank wagon	Gasoline Service station	Gasoline Incldg tax of	Kero. Tank wagon
Chicago Dist.—				
†100 gals. or more	18.0	21.0	...	12.0

Tank wagon prices on April 19, 1922; g. up 1¼c; May 8, g. up 1c; June 27, both up 1c; July 19, g. down 2c, k. down 1c; Oct. 10, g. down 2c; Oct. 21, g. down 1c; Feb. 5, 1923, g up 1c; Feb. 30, g. up 1c; Aug. 14, g. down 6.6c; Oct. 4, k. down 1½c; Nov. 10, g. down 1.4c; Dec. 29, g. up 2c; Jan. 12, 1924, g. up 2c, k. up 1c; Feb. 5, g. up 2c, k. 1c; July 18, g. down 1c; July 30, g. and k. down 1c; Sept. 12. g. down 2c; Jan. 23, 1925, g. up 1c; Jan. 26, g. up 1c; Jan. 31, g. up 1c; Jan. 26, g. up 1c; Jan. 31, g. up 1c; Feb. 12, g. up 2c, k. up 1c.

Decatur, Ill.	18.2	20.2	...	12.5
East St. Louis	17.1	19.35	...	11.6
Joliet	18.4	20.4	...	12.7
Peoria	18.2	20.2	...	12.5
Quincy	18.2	20.2	...	12.3
Davenport, Ia.	18.5	20.5	...	12.9
Des Moines	18.5	20.5	...	12.9
Keokuk	18.5	20.5	...	12.9
Sioux City	18.1	20.1	...	12.5
Duluth, Minn	19.5	21.5	...	13.6
Minneapolis	19.2	21.2	...	13.6
La Crosse, Wis.	19.2	21.2	...	13.4
Milwaukee	18.1	20.1	...	12.3
Madison	18.3	20.3	...	12.5
Detroit, Mich.	20.8	22.8	2.0	13.2
Grand Rapids	20.7	22.7	2.0	13.1
Saginaw	20.9	22.9	2.0	13.3
Evansville, Ind.	20.0	22.0	2.0	12.5
Fort Wayne	20.4	22.4	2.0	12.9
Indianapolis	20.2	22.2	2.0	12.7
South Bend	20.4	22.4	2.0	12.9
Fargo, N. D.	20.9	22.9	1.0	15.6
Huron, S. D.	22.0	24.0	2.0	14.1
Sioux Falls	21.5	23.5	2.0	13.6
*Kansas City, Mo.	20.9	22.9	3.0	11.3
*Springfield	20.8	22.8	3.0	12.2
*St. Louis	19.6	21.9	2.5	12.0
*St. Joseph	20.0	22.0	2.5	11.9
Wichita, Kans.	17.8	19.8	...	10.8
Bartlesville, Okla	19.4	21.4	...	10.9

*State tax is 2c. Remainder is city tax.
†Tank wagon price on less than 100 gallons, 19.0.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline Tank wagon	Gasoline Service station	Gasoline Incldg tax of	Kero. Tank wagon
Newark, N. J.	19.0	21.0	...	13.0
Atlantic City	19.0	....	...	13.0
Annapolis, Md.	22.0	24.0	2.0	12.0
Baltimore	21.0	23.0	2.0	11.0
Cumberland	22.0	24.0	2.0	12.5
Washington, D. C.	21.0	23.0	2.0	12.5
Norfolk, Va.	23.0	25.0	3.0	13.5
Petersburg	23.0	....	3.0	13.5
Danville	23.0	....	3.0	13.0
Richmond	22.0	24.0	3.0	13.5
Roanoke	23.0	25.0	3.0	13.5
Keyser, W. Va.	21.0	....	2.0	13.5
Charleston	20.0	22.0	2.0	13.5
Parkersburg	20.0	22.0	2.0	13.5
Wheeling	20.0	22.0	2.0	13.5
Charlotte, N. C.	23.0	25.0	3.0	13.5
Hickory	23.0	....	3.0	13.5
Mt. Airy	23.0	....	3.0	13.5
Salisbury	23.0	....	3.0	13.5
Charleston, S. C.	23.0	25.0	3.0	14.0
Columbia	23.0	25.0	3.0	14.0

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline Tank wagon	Gasoline Service station	Gasoline Incldg tax of	Kero. Tank wagon
*Pittsburgh, Pa.	19.0	24.0	...	14.0
*Philadelphia	19.0	24.0	...	14.0
*Scranton	19.0	24.0	...	14.0
*Allentown	19.0	24.0	...	14.0
*Altoona	19.0	24.0	...	14.0
*Erie	19.0	24.0	...	14.0
Dover, Del.	21.0	24.0	2.0	14.0
Wilmington	21.0	24.0	2.0	14.0
Springf'ld, Mass.	21.0	25.0	...	13.0
Worcester, Mass.	21.0	25.0	...	13.0
Boston	21.0	25.0	...	11.0
Providence, R. I.	21.0	25.0	...	13.0
Hartford Conn.	22.0	26.0	1.0	12.0
New Haven Conn.	22.0	26.0	1.0	13.0

*Pennsylvania tax of 2 cents is collected by the dealer and paid by him direct to the State.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline Tank wagon	Gasoline Service station	Gasoline Incldg tax of	Kero. Tank wagon
New Orleans La.	20.5	22.5	2.0	11.0
Alexandria	20.5	22.5	2.0	12.0
Baton Rouge	19.0	21.0	2.0	11.5
Lake Charles	20.5	22.5	2.0	13.0
Shreveport	20.5	22.5	2.0	13.0
Memphis, Tenn.	21.0	23.0	3.0	14.0
Chattanooga	22.5	24.5	3.0	14.5
Knoxville	23.5	25.5	3.0	15.0
Nashville	22.5	24.5	3.0	13.5
Bristol	24.0	26.0	3.0	13.5
Little Rock, Ark.	23.0	25.0	4.0	11.0

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline Tank wagon	Gasoline Service station	Gasoline Incldg tax of	Kero. Tank wagon
Atlanta, Ga.	24.0	27.0	3.0	13.0
Augusta	24.0	27.0	3.0	13.5
Macon	24.0	27.0	3.0	14.5
Savannah	22.0	25.0	3.0	13.0
Birmingham, Ala.	22.0	25.0	2.0	14.5
Mobile	21.0	24.0	2.0	12.5
*Montgomery	23.0	26.0	3.0	15.5
Clarksdale, Miss.	22.0	25.0	3.0	12.0
Jackson	22.0	25.0	3.0	10.0
Natchez	21.5	24.5	3.0	11.5
Vicksburg	21.5	24.5	3.0	11.5
Jacksonville, Fla.	22.0	25.0	3.0	13.0
Miami	24.0	27.0	3.0	14.5
Pensacola	22.0	25.0	3.0	13.5
Tampa	22.0	25.0	3.0	13.0
Lexington, Ky.	22.0	25.0	3.0	14.0
Covington	20.0	23.0	3.0	14.0
Louisville	22.0	24.0	3.0	12.0

*In addition to the State tax of 2 cents on gasoline. Montgomery has city tax of 1 cent on gasoline and ⅛ cent on kerosene.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline Tank wagon	Gasoline Service station	Gasoline Incldg tax of	Kero. Tank wagon
Dallas, Texas	17.0	21.0	1.0	12.0
Fort Worth	17.0	21.0	1.0	12.0
Houston	17.0	21.0	1.0	12.0
San Antonio	17.0	20.0	1.0	12.0
El Paso	19.0	22.0	1.0	13.0
Muskogee, Okla.	20.0	23.0	2.5	12.0
Oklahoma City	20.0	23.0	2.5	12.0
Tulsa	20.0	23.0	2.5	11.0
Ft. Smith, Ark.	21.5	24.5	4.0	12.0
Little Rock	23.0	25.0	4.0	11.0
*Texarkana	19.0	22.0	1.0	12.0

*Does not include 1c additional tax.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline Tank wagon	Gasoline Service station	Gasoline Incldg tax of	Kero. Tank wagon
Casper, Wyo.	20.0	22.0	1.0	13.0
Cheyenne	21.5	23.5	1.0	14.5
Albuquerque, N. M.	24.5	27.5	1.0	16.5
Salt Lake, Utah	23.0	25.0	2.5	18.0
Denver, Colo.	21.0	23.0	2.0	14.5
Pueblo	21.0	23.0	2.0	14.5
Butte, Mont.	22.0	24.0	2.0	16.0
Helena	24.0	26.0	2.0	17.0
Boise, Idaho	23.5	25.5	2.0	20.0

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline Tank wagon	Gasoline Service station	Gasoline Incldg tax of	Kero. Tank wagon
Albany, N. Y.	21.0	....	...	13.0
*New York	21.0	....	...	13.0
Buffalo	21.0	....	...	12.0
Rochester	21.0	....	...	13.0
Syracuse	21.0	....	...	12.0
Boston, Mass.	21.0	....	...	13.0
Providence, R. I.	21.0	....	...	13.0
Augusta, Me.	22.0	....	1.0	13.0
Manchester, N. H.	23.0	....	2.0	13.0
Burlington, Vt.	22.0	....	1.0	13.0

*Price in steel barrels.
Note: Standard Oil Co. of New York does not generally quote service station price in its territory. In most cases the service station price is 2 or 3 cents higher than tank wagon price.

PACIFIC COAST DISTRICT

Standard Oil Co. of California

	Gasoline Tank wagon	Gasoline Service station	Gasoline Incldg tax of	Kero. Tank wagon
San Francisco	17.0	20.0	2.0	15.5
Los Angeles	15.5	18.5	2.0	15.5
Fresno	17.5	20.5	2.0	19.5
Reno, Nev.	20.5	23.5	2.0	19.0
Portland, Ore.	18.0	21.0	3.0	16.5
Seattle, Wash.	17.0	20.0	2.0	16.5
Tacoma	17.0	20.0	2.0	16.5
Spokane	21.0	24.0	2.0	20.5
Phoenix, Ariz.	23.0	26.0	3.0	21.5

OHIO

Standard Oil Co. (Ohio)

	Gasoline Tank wagon	Gasoline Service station	Gasoline Incldg tax of	Kero. Tank wagon
All Ohio points.	18.5	20.5	...	15.0

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline Tank wagon	Gasoline Service station	Gasoline Incldg tax of	Kero. Tank wagon
Omaha	16.0	18.0	...	12.5
Crawford	19.0	....	...	13.25
McCook	19.75	21.75	...	14.0
Norfolk	18.75	20.75	...	13.0
North Platte	19.75	21.75	...	13.75
Scotts Bluff	19.25	21.25	...	13.25

TANK WAGON CHANGES

February 9.—The Standard Oil Co. of Louisiana advanced gasoline tank wagon and service station prices 1 cent in Tennessee, to cover 1-cent advance in the State tax.

February 18.—The Magnolia Petroleum Co. advanced the kerosene tank wagon price 1 cent in Texas.

February 19.—The Magnolia Petroleum Co. advanced the gasoline tank wagon and service station prices 1 cent in Oklahoma.

February 20.—The Magnolia Petroleum Co. advanced the kerosene price 1 cent at Texarkana.

PRICES GENERALLY LOWER IN OKLAHOMA

(Continued from Page 20)

advanced 5 cents since the first of the year, the refiners advanced approximately the same amount, so the jobbers' position was not improved.

Many sellers now believe the jobbers will enter the market and fill their storage for the summer demand. This will not occur, however, until the buyers are certain the gasoline prices at the refineries are near bottom.

Marginal Contracts

Another possible explanation of the present market condition lies in the marginal contracts. For several weeks these contracts have been below the spot market which the sellers have attempted to maintain. The effect was clearly shown during the past week.

The Greenslade Oil Co., a large jobbing concern of Detroit, Mich., last week placed an order for approximately 100 cars of gasoline for March delivery. A marketing concern secured the business at 12¼ cents, a price, which up to that time, was exceptionally low. It later developed the marketing organization placed the order with another concern which is engaged both in the jobbing and marketing business. The latter concern had a marginal contract with a large Oklahoma refiner and will order out the gasoline at a price established by this contract. No better illustration of the working of marginal contracts in a weak market situation could be obtained. Just what this particular contract was netting the refiner is not known, but it was low enough so that two resale agents could secure their margin and still sell to the jobber at a price which at the time was one-fourth to one cent lower than the prevailing spot market. It is estimated at the present time these contracts are netting an average of 11 cents.

Export Contracts

Activity in the export market during the past week was largely confined to additional contracts placed with Oklahoma and North Texas refiners by the Standard Oil Co. of New Jersey. As was explained in these columns several weeks ago the New Jersey company has been offering the refiners a contract for the purchase of 64-66, 375 based on the company's export at Baton Rouge, La. Under the terms of this contract the buyer pays the refiner 1 cent under the export price at point of delivery.

At the time the contract was first offered few refiners regarded it with favor due to the fact that the prevailing spot market was higher than the contract basis. During the past 10 days this situation has changed because of the slump in the spot market. It is known that several refiners who refused the contract several weeks ago have recently expressed their willingness to accept it and several additional contracts have been closed.

The export price at present is 18 cents at Baton Rouge, so, taking into consideration the freight rates, the contracts are now netting the refiners in North Texas 15⅝ cents for 375 and approximately 15½ cents in Oklahoma. It is also understood the Standard company has closed contracts for 390 end point material at a price which nets the refiner 1 cent less than he receives for 375. Both these prices are one-fourth to three-fourths cent above the spot market.

It is believed with the contracts closed during the past week the Standard company will not take in excess of 5,000,000 gallons monthly from Oklahoma and North Texas refiners. This should aid in the stabilization of the export market for the higher gravities and at the same time strengthen the position of the domestic motor grades.

Gasolines and Naphtha

The spread on 58-60 U. S. Motor gasoline the first of the week was generally 12 to 13 cents with quotations both below and above the spread. A few refiners stated they were still able to obtain 13 cents from the trade although refiners were willing to sell as low as 12 cents. Marketers were selling short at 12 cents expecting to cover later in the month at a profit. On Tuesday, at least two Oklahoma refiners were quoting 11¾ cents direct to the trade.

Jobbers were not buying heavily despite the low prices. The prevailing price on 60-62, 400 was 14 cents the latter part of last week. On Monday this price could be shaded, scattered orders at 13¾ cents being reported on Tuesday.

The domestic price on 64-66, 375 was 15 to 15¼ cents with a slow demand. One exporter was reported to have bought a half million gallons at 15¼ cents for March delivery.

Kerosene and Distillates

Both distillates and kerosenes are soft. The 4¾ to 5-cent prices on 41-43 water white kerosene was fairly well maintained during the week. The 42-44, water white sold for resale as low as 5 cents. Distillates continued to slip, purchases of the 38-40 straw grade being made as low as 3¾ cents.

Fuel and Gas Oils

Fuel and gas oils were both sluggish and sales for March delivery placed during the past week were generally lower than February. A large number of shipments were placed during the week at $1.20 for all grades of fuel oil between 20 and 26 gravity. Prices ranged up to $1.25. The $1.20 price was shaded in a few sales for grades below 20 gravity. Gas oil was offered freely at 3½ and 3¾ cents.

Natural Gasolines and Blends

As predicted by market observers, natural gasolines slumped along with the refinery gasolines. There was little demand and the manufacturers who were not protected by contracts had difficulty in maintaining the usual movement from their plants. The reduction on all grades for the week was 1 cent. Blends are slow and have also been reduced in price.

Lubricants and Wax

Some improvement in the demand for all classes of lubricants was reported and there has been no price cutting under the recently established schedules. A 200 ton sale of wax at 5.3 cents was closed during the week.

NEW COASTAL COMPLETIONS

HOUSTON, Tex., Mar. 3.—Vacuum Oil Co.'s No. 1 Barrett, in the South Liberty Field, came in flowing 3,000 bbls. at 3,430 feet. Bashara Oil Co.'s No. 1 Pickett bailed dry at 3,245 feet and will deepen. It is 300 feet south from the Vacuum well, which is in the group on the northeast side of the dome.

The Gulf Production Co.'s No. 46 Phoenix, in the Hull Pool is flowing 2,500 bbls. at 3,150 feet.

OIL IMPORTS IN BRITAIN

Petroleum imports into United Kingdom, week ended February 16, were 36,000,000 Imperial gallons against 7,500,000 the preceding week.

BEHIND the Sinclair trade-mark are Sinclair's Refineries producing a line of oil products of high uniform quality—a quality that is maintained in every can, barrel or tank car showing the Sinclair trade-mark.

SINCLAIR REFINING COMPANY

New York: Sinclair Oil Bldg., 45 Nassau St. Chicago: 111 W. Washington St.

Cable Address: "Lucent"

Refineries:

EAST CHICAGO, INDIANA
KANSAS CITY, KANSAS
COFFEYVILLE, KANSAS
CUSHING, OKLAHOMA
MUSKOGEE, OKLAHOMA
HOUSTON, TEXAS
WELLSVILLE, N. Y.
PHILADELPHIA, PA.
(under construction)

SINCLAIR OILS

Developments in Topping Plant Design

Refining of Petroleum Largely a Question of Thermodynamics and Economies Come From Conservation of Fuel

By H. W. Camp
General Superintendent Empire Refineries, Inc.

The refining of petroleum is to a large extent a question of thermodynamics and the economies to be hoped for come for the most part from conservation of heat —equivalent to fuel—through proper fractionation and the reduction of rerunning, or through more efficient utilization of fuel, or both. This effort to save heat —or fuel—was one of the principal factors leading to the practically universal use of stills in continuous batteries in preference to stills operating by the older batch method. The addition of properly designed fractionating towers to continuous batteries has eliminated most of the rerunning and effected marked economies, but the results are still below the ideal. Shell stills, well set and operating under the best conditions, seldom have thermal efficiencies better than 30 or 35 per cent and usually less; furnace efficiencies in modern plants, are at least twice that.

Since refining depends on the transfer of heat into the oil and since the rate of transfer of heat between the fluids (one being the furnace gases) is known to be best when the two fluids are divided into small streams passing current to each other with relatively high velocities over the separating surface, it is readily understood why a pipe still should be more efficient than a shell still.

In one design of pipe still the combustion chamber and tube chamber have been kept separate so complete combustion may take place before the heated gases strike the relatively cold tubes. The entire setting is a red brick wall lined with fire brick with a layer of insulating brick between for heat conservation. A central wall, wholly of fire brick and provided with proper expansion joints, divides the setting into two parts— a tube chamber and a combustion chamber. The furnace side is so proportioned the fuel is completely consumed, leaving only hot gases to pass through the opening in the central wall, after which they pass over the tubes, around the baffles to the stack. The oil enters at the lowest point and flows upward through the continuous pipe coil from the coldest to the hottest part of the furnace. Its flow is as near counter current to the gases as is practical in a continuous coil.

The brick walls are strengthened and supported by steel buckstays, which extend above the brick work to serve as columns for supporting the beams carrying the flat arch, as well as supporting light trusses of the protective roof over the entire furnace. This protective roof is essential, unless the furnace is otherwise housed, as a flat arch must be protected from the weather.

Basic Idea

The basic idea of this still can be varied to suit individual cases. Some feel one or two layers of tubes should be placed on the furnace side of the bridge wall, as a protection for the arch, while others argue no relatively cold surfaces, such as tubes, should come in contact with the gases in the furnace side—or until combustion has been completed.

The cast iron tube sheets are insulated on the inner face with plastic fire clay, easily installed and probably more durable than using special brick shapes to fit around the tubes.

While the flat arch is the only suitable construction for large furnaces, there have been very successful pipe stills, built using the sprung arch. The limits of the sprung arch as to span and the heavy thrust on the side walls, make it less durable. The flat arch can be suspended from a steel gallows frame or from the buckstays, so no load is carried by the side walls. With expansion joints provided, there will be no side thrust. Of course, it would be possible to carry a sprung arch on steel independent of the side walls, but probably not as easily as the flat arch can be.

A pipe still meets the conditions required for maximum heat transfer and fuel economy better than a shell still. This is emphasized by the flue gas temperatures. The only chance of a shell still absorbing heat from the gases is in their passage under the shell from the burner to the flue and since the oil in a shell still is all at practically the same temperature, the flue gases can never be below the oil temperature. Actually, they are at least a couple hundred degrees higher, going to the stack at 600 to 800 degrees Fahrenheit and sometimes more. In the pipe still, with its counter flow principle, the outlet gases can be brought down more nearly to the inlet oil temperature. A case is known where oil enters from the heat interchanger at about 250 degrees, the gases leaving at 385 degrees and never over 400 degrees. A well designed shell still, with an efficiency of 38 per cent by test, had a flue temperature of 665 degrees. With the same firing rate, the same excess air and the same initial furnace temperature, the shell still represents a heat loss of 15.5 per cent higher than the pipe still. To do the same work the shell still uses 15.5 per cent more fuel.

Fuel Saving

Another fuel saving means, equally adaptable to either still, shows the possibilities yet before us in conserving fuel and reducing operating costs. The temperature of combustion with the exact amount of air needed, is much higher than ordinary furnace refractories will stand. The temperature of a natural gas flame with no excess air is close to 3,500 degrees Fahrenheit. To cut this to the temperature a furnace and still can stand, excess air is admitted. The furnace is overventilated and a very large quantity of air is heated, only to pass up the stack—a dead loss. Recuperators can recover some of this heat and save it by heating the incoming air or, perhaps better, a portion of the flue gases can be taken from the base of the stock and recirculated through the furnace by a blower. These inert gases are already hot; they may be considered as never leaving the system and while they dilute the very hot flames, since only the proper amount of air for combustion is allowed to enter the furnace and an equivalent quantity of flue gases to go up the stack, the heat loss by flue gases is greatly reduced.

Leaving the pipe still and considering the oil at the outlet to be at a predetermined temperature and held to that temperature by thermostatic control on the fuel valves, we will consider the evaporator where the hot oil is released and permitted to evaporate to whatever degree necessitated by its original temperature.

Evaporators

In its earlier stages, the evaporator was a simple expansion drum where the pressure on the oil was released. Later developments added baffles of various types. The style I have described calls for the oil being introduced through a perforated ring, spraying downward on the outer surface of a conical baffle. The vapors separating can pass off at once and are removed from further contact with the oil, so there is no danger of re-absorption at cooler temperatures. The oil flowing over the bottom edge of the first, or top cone, is again broken up by the serrations around its edge and then falls on the inner surface of an inverted cone. This process is repeated over a sufficient number of trays to insure separation and the residual oil then falls to the reservoirs at the bottom, from whence it can pass to a battery of shell stills for further reduction, or be pumped through a second pipe still for further processing.

The vapors separating from the oil pass upward, either through the inner passage way or up around the shell, which should be insulated, to the top of the evaparotor, where they can be dried of entrained liquid by a few pans or baffles or by some such device as a Tracy purifier.

A small steam coil is located at the base of the tower. This permits superheated steam to enter to aid in the evaporation or separation, much as it does in shell stills, by decreasing the oil vapor pressure over the oil in keeping with the well known law of partial pressures.

Other efficient evaporators may be designed but the prime features to be sought are the distribution of the oil in a thin spray or thin layers and a means of conducting vapors away as rapidly as liberated so no re-absorption into the cooled oil will take place.

Further Fractionation

The separated vapors leaving the evaporator represent a crude product and must be further fractionated before being of greatest value. Such separation or fractionation can be effected by rerunning or by use of fractionating towers. There are many types of towers, some little more than mere drums, others contain fillings of crocks, stones, pipe nipples or other material, others filled with trays or pans or other baffles while still others have series of bubble caps.

In towers there is perhaps greater divergence of opinion than in any one subject in the industry and while I discuss one particular type you should not infer I mean it is necessarily the only tower, for individual condition may make some particular type best for that case.

The tower I have in mind is a plain shell filled with shallow pans or trays arranged so the ascending vapors pass around the edges of one pan and through the center of the next and so on. The reflux or condensed fractions pass downward from one tray to another either overflowing the edges of the trays or dripping through small holes punched around the edges of the trays or the central opening. While a number of such towers have been operated with just the pans, some have also been built with from two to five trays of bubble caps above the pans.

In the head of the tower are two pipe coils for control purposes, the outgoing vapors passing around the coils while some cooling medium is passed through the coils. After passing the coils the vapors are sharply reversed in direction so any entrained liquid is thrown out. The coils may be thermostatically controlled to give a certain definite temperature to the outgoing vapors, resulting in a gasoline of a desired endpoint. Whatever portion the cool coils condense, drops to the bottom of the tower, over the trays, as reflux or knockback.

The outgoing vapors pass to a condenser which may be of the conventional submerged type or one of the multitube-

*Before Western Petroleum Refiners' Association, Kansas City, Mo.

W. P. R. A. CONVENTION REGISTRATION

Carl A. Danielson, Union Draft Gear Co., Chicago.
C. H. Laessig, Automobile Gasoline Co., St. Louis.
H. E. Brandli, Carson Petroleum Co., Chicago.
William A. Knapp, Butler Manufacturing Co., Kansas City.
P. R. Gray, The Gray Process Corp., Newark, N. J.
E. W. Sieboldt, Roxana Petroleum Corp., St. Louis.
A. C. Elliott, Pure Oil Co., Tulsa.
John H. Erter, Anderson-Prichard Corp., Oklahoma City.
F. E. Burke, Chestnut & Smith, Tulsa.
C. F. Dowd, Tidal Oil Co., Tulsa.
W. J. Filer, Roxana Petroleum Corp., St. Louis.
H. D. Drixcoll, Oklahoma Refiners' Association, Oklahoma City.
Mrs. Daniel McCarthy, Denver.
Daniel F. McCarthy, Producers & Refiners Corp., Denver.
F. H. Emig, National Petroleum Marketers' Association, Chicago.
Malcolm H. Tuttle, Continental Oil Co., Denver.
D. C. Nixson, Producers & Refiners Corp., Tulsa.
S. E. Brin, Primrose Petroleum Co., Dallas.
Neal Buckley, Parson Petroleum Co., Tulsa.
H. C. Gibson, Parson Petroleum Co., Pittsburgh, Pa.
A. A. Carrabrant, Atlantic Refining Co., Philadelphia.
H. H. Eagle, Cities Service Export Oil Co., New York.
J. H. Miller, Miller Petroleum Co., Kansas City.
V. E. Boiene, Bolene Refining Co., Enid.
B. L. Majowski, Shaffer Oil & Refining Co., Chicago.
B. J. Burchett, Shaffer Oil & Refining Co., Chicago.
L. S. Randolph, Randolph Petroleum Co., Tulsa.
R. B. Tansel, Randolph Petroleum Co., Tulsa.
A. N. Ballard, The Sun Co., Tulsa.
Dr. R. H. Waser, Roxana Petroleum Co., Arkansas City, Kans.
C. A. Willis, Empire Refineries, Tulsa.
O. L. Cordell, Waite Phillips Co., Tulsa.
F. T. Hopp, Skelly Oil Co., Tulsa.
H. P. Dunn, Advance Petroleum Corp., Chicago.
Mrs. H. P. Dunn, Chicago.
W. B. Hamilton, Texhoma Oil & Refining Co., Wichita Falls, Tex.
W. J. Algiers, Trans-Continental Oil Co., Tulsa.
C. H. Campbell, Lone Star Gas Co., Dallas.
W. J. Hayes, Ohio Steel Foundry Co., Springfield, Ohio.
C. J. Holland, American Refining Co., Wichita Falls, Tex.
C. L. Seideman, Imperial Refining Co., Tulsa.
F. S. Thompson, Constant Refining Co., Tulsa.
Arthur L. Davis, Empire Refineries, Inc., Okmulgee, Okla.
R. W. Patterson, North American Car Co., Tulsa.
Mrs. V. E. Jackson, Wichita Falls, Tex.
A. E. Garrett, Tidal Refining Co., Tulsa.
W. E. Perdew, Derby Oil Co., Wichita, Kans.
Mrs. W. E. Perdew, Wichita, Kans.
W. E. Brown, Producers & Refiners, Denver.
L. H. Cowles, White Eagle Oil & Refining Co., Kansas City.
Dr. J. C. Morrell, Universal Oil Products Co., Chicago.
C. E. Sarteis, White Star Refining Co., Wood River, Ill.
F. A. Pielsticker, Skelly Oil Co., El Dorado, Kans.
V. E. Jackson, Iowa Park Producing & Refining Co., Wichita Falls, Tex.
Mrs. N. H. Martin, Wichita Falls, Tex.
N. H. Martin, Texhoma Oil & Refining Co., Wichita Falls, Tex.
W. L. Scott, Texhoma Oil & Refining Co., Wichita Falls, Tex.
C. K. Francis, C. K. Francis, Tulsa.
Mrs. F. A. Pielsticker, El Dorado, Kans.
H. C. Mulroy, Mulroy Oil Co., Ponca City, Okla.
C. A. Keller, Derby Oil Co., Wichita, Kans.
H. C. Claiborne, Derby Oil Co., Wichita, Kans.
H. L. Shoemaker, Standard Oil Co., New York.
William C. Schramm, Mound City Chemical Co., St. Louis.
W. Dietz, Mound City Chemical Co., St. Louis.
A. McD. Gray, The Gray Process Corp., Newark, N. J.
R. D. Garnett, New Orleans Refining Co., New Orleans.
George S. Allee, Missouri Oil Jobbers' Association, Kansas City.
C. W. Cahoon, Cities Service Export Oil Co., New York.
F. L. Bunn, Tidal Refining Co., Tulsa.
J. M. Carson, Cosden Sales Corp., Chicago.

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lar type as developed by the Southwestern Condenser Co., by Braun or Griscom-Russell.

In some cases, vapor to oil heat exchangers and condensers may be utilized, returning to the system the heat in the vapors. The use of such apparatus is a special problem and depends on the work to be done, on water conditions and on the crudes. The reflux from the tower base may be saved as a cut or it may be returned to the still, or to the next still if the topping unit is used in connection with a continuous battery.

Summarization

Summarizing, the topper I have discussed is a pipe still, an evaporator, a fractionating tower and a condenser. The other necessary equipment, needs no discussion. Such a topper can operate very efficiently in connection with a crude battery by taking off the gasoline cuts, the topped oil from the evaporator entering the first shell still by gravity together with the reflux from the tower, while the hot residuum from the final still can be cooled in an interchanger wherein the crude on its way to the topper is preheated. A portion of the cold crude is cut through the tower coils for control purposes.

A further development is the addition of further toppers of the type discussed, the topped oil from the first being picked up by a hot oil pump and forced through the next and so on.

Some work has been done along the line of evaporating a heavy cut from the crude, then knocking down the respective cuts desired in a series of towers, the lightest fractions being thrown down last. The commercial development of this type of plant has not been highly successful yet, but future work may make it a very desirable process.

FIRST DAY'S REGISTRATION W. P. R. A. CONVENTION

(Continued from Page 116)

T. F. Thompson, Northland Oil Co., Chicago.
Thomas P. Collins, Industrial Petroleum Corp., Chicago.
G. B. Williams, Johnson Oil & Refining Co., Chicago.
E. L. Mott, Deepwater Refining Co., Houston, Tex.
H. A. Evans, Phillips Petroleum Co., Bartlesville.
A. D. Eubank, Diamond Refining Co., Kansas City.
H. T. Ashton, Lubrite Refining Co., St. Louis.
Edward E. Stewart, Crystal Petroleum & Refining Co., Wichita Falls, Tex.
L. C. Hickox, Paramount Petroleum Co., Kansas City.
A. F. Borgolte, Atlas Petroleum Co., Kansas City.
A. A. Smith, Monarch Gas & Oil Co., Kansas City.
L. H. Lingenfelter, Petroleum Marketing Co., Kansas City.
M. D. Creel, Marland Refining Co., Ponca City, Okla.
M. E. Klespie, Waite Phillips Co., Tulsa.
G. A. R. Slocum, Skelly Oil Co., El Dorado, Kans.
George Sneeden, Lorraine Refining Co., Tulsa.
I. H. Patton, Lorraine Refining Co., Tulsa.
Mrs. J. P. Howe, Kansas City.
A. R. Bogan, Missouri Pacific Railway, St. Louis.
J. V. Kennedy, Pere Marquette Railroad, Kansas City.
Louis M. Dunn, Elgin, Joliet & E. Railroad, Chicago.
O. B. Ward, Battenfeld B. & O. Co., Kansas City.
Mrs. J. H. Miller, Kansas City.
Miss Inez Miller, Kansas City.
Roy B. Jones, Panhandle Refining Co., Wichita Falls, Tex.
E. H. Ritter, Western Petroleum Refiners' Association, Tulsa.
R. L. McReynolds, White Eagle Oil & Refining Co., Kansas City.
C. L. Mayhall, Imperial Refining Co., Tulsa.
William C. Davis, Miller Petroleum Co., Kansas City.
Walter Miller, Marland Refining Co., Ponca City.
Mrs. Walter Miller, Ponca City, Okla.
A. T. Sindel, A. T. Sindel Co., Kansas City.
S. L. Calhoun, Oil Trade, Tulsa.
Leed D. Becker, Oil Trade, New York.
Mrs. J. H. Campbell, Chicago.
F. D. Applegate, Marland Ref. Co., Ponca City, Okla.
Robert Rose, General American Tank Corp., Tulsa.
G. G. Woodruff, Roxana Petroleum Corp., St. Louis.
W. A. Peters, Jr., E. B. Badger Co., Boston, Mass.
Milo W. Taxman, Atlas Petroleum Co., Kansas City.
Frank E. Spencer, Spencer Petroleum Co., Chicago.
R. R. Trimble, Missouri Pacific Railroad, Tulsa.
Mrs. E. L. Mott, Kansas City.
F. W. Fischer, Guarantee & L. Measure Co., Rochester, Pa.
Sam Collins, Marland Refining Co., Ponca City, Okla.
Joe L. Walsh, Continental Oil Co., Kansas City.
Robert M. Forbes, Acme Petroleum Co., Kansas City.
C. F. Bradley, Gulf Refining Co., Annandale, Minn.
J. H. Campbell, Industrial Petroleum Corp., Chicago.
A. S. Laudermilk, America Can Co., Kansas City.
H. U. Williams, American Can Co., Kansas City.
Al H. Reed, American Petroleum & Supply Co., Dallas.
L. E. Thomason, Marland Refining Co., Kansas City.
D. E. Bush, Diamond Refining Co., Kansas City.
T. A. Tracey, Sinclair Refining Co., Dallas.
L. V. Stanford, Sinclair Refining Co., New York.
Elliott Jones, Elliott Jones & Co., San Antonio.
W. T. Atkins, Skelly Oil Co., Kansas City.
F. L. Miller, Miller Petroleum Co., Kansas City.
C. W. Rice, Vickers Petroleum Co., Wichita, Kans.
George H. Kinney, K. C. Structural Steel Co., Dallas.
H. T. Smart, Miller Petroleum Co., Wichita Falls, Tex.
E. E. Roper, Miller Petroleum Co., Kansas City.
William Knapp, Skelly Oil Co., Kansas City.
L. C. McClure, Nyanza Refining Co., Oklahoma City.
O. N. Lightner, Sherwin Williams Paint Co., Kansas City.
D. A. Dean, Oil State Refining Co., Enid, Okla.
Fayette B. Dow, W. P. R. A., Washington, D. C.
Arthur Winters, The Kanotex Refining Co., Salina, Kans.
T. F. Rhoy, The Texhoma Oil & Refining Co., Omaha, Neb.
H. G. McLean, Empire Co., Tulsa.
A. F. Morrison, The Kanotex Refining Co., Arkansas City, Kans.
R. M. Moon, Imperial Oil Marketing Co., Tulsa.
Mrs. R. M. Moon, Tulsa.
E. W. Goebel, Kansas City Refining Co., Kansas City.
C. W. Cahoon, Jr., Carson Petroleum Co., Dallas.
H. E. Butcher, Empire Gas & Fuel Co., Bartlesville, Okla.
Clarence Lockwood, The Oil and Gas Journal, Tulsa.
C. O. Willson, The Oil and Gas Journal, Tulsa.
H. G. Watts, Derby Oil Co., Wichita.
W. B. Campbell, Panhandle Petroleum Co., Wichita Falls, Tex.
E. F. Griswold, Griswold Oil Corp., Wichita Falls, Tex.
Mrs. E. F. Griswold, Wichita Falls, Tex.
H. E. Pelt, America Petroleum Produce Co., Tulsa.
William H. Little, National Petroleum News, Tulsa.
P. W. L. Tydeman, Roxana Petroleum Corp., Wood River, Ill.
G. C. Goller, Lubrite Refining Co., St. Louis.
J. G. Tigerman, Republic Flow Meters, Kansas City.
Herb Graffis, Petroleum Age, Chicago.
F. G. Gissler, Conley Tank Car Co., Dallas.
Fred Allshouse, Wheeling & Lake Erie Railroad, St. Louis.
W. E. Moody, Shaffer Oil & Refining Co., Cushing, Okla.
W. E. O'Meilia, Westcott & Greis, Tulsa.
Neil Williams, The Oil and Gas Journal, Tulsa.
W. P. Jacobie, Wadhams Oil Co., Tulsa.
Mrs. L. B. Simmons, Duncan, Okla.
L. B. Simmons, R. I. Refining Co., Duncan, Okla.
Mrs. W. J. Filer, St. Louis.
C. R. Musgrave, Phillips Petroleum Co., Bartlesville.
Mrs. C. R. Musgrave, Bartlesville.
P. N. Davey, Atlantic Oil Producing Co., Dallas.
H. F. Miller, Carter Oil Co., Tulsa.
Howard Bennette, Western Petroleum Refiners' Association, Tulsa.
Paul Truesdell, National Petroleum News, Cleveland, Ohio.
Lloyd Daver, Tidal Refining Co., Tulsa.
A. V. Bourcoue, Association of Natural Gasoline Manufacturers, Tulsa.
J. D. Powell, Skelly Oil Co., El Dorado, Kans.
F. H. Bowman, Pure Oil Co., Columbus, Ohio.
T. C. Anderson, American Car & Foundry Co., St. Louis.
W. M. Harrison Star Refining & Producing Co., Fort Worth.
W. F. Davis, The Orient Petroleum Co., Wichita Falls, Tex.
L. W. Brown, The Fisher Governor Co., Marshalltown, Iowa.
C. C. Calvert, Rock Island Refining Co., Duncan, Okla.
C. Rappenbach, The Oil and Gas Journal, Chicago.
C. Morris, The Oil and Gas Journal, Tulsa.
Joe Harp, Chapman Refining Co., Enid, Okla.
C. C. Peppers, Peppers Gas Co., Enid.
C. S. Verschoyle, R. I. Refining Co., Duncan, Okla.
L. A. Greene, Radio Petroleum Co., Fort Worth.
W. R. Boyd, Jr., American Petroleum Institute, New York.
George D. Locke, Barnsdall Refining Co., Chicago.
John L. Gray, Shaffer Oil & Refining Co., Tulsa.
S. E. Murphy, Empire Refineries, Inc., Tulsa.
Raymond Brin, Primrose Petroleum Co., San Antonio.
D. W. Harris, Empire Refining Corp., Bartlesville.
L. D. Summerwell, Kansas City Refining Co., Kansas City.
F. A. Conway, Western Petroleum Refiners' Association, Tulsa.
M. F. Waters, Smith Separator Co., Tulsa.
A. F. Wood, Chestnut & Smith Corp., Tulsa.
H. K. Davis, Western Petroleum Refiners' Association, Tulsa.
Rex W. Winget, Cushing Refining & Gas Co., Cushing, Okla.
A. F. Winn, Skelly Oil Co., El Dorado, Kans.
W. W. Klingensmith, Transcontinental Oil Co., Pittsburgh, Pa.
J. E. Galvin, Ohio Steel Foundry Co., Lima, Ohio.
F. A. Esbaugh, Waite Phillips Co., Tulsa.
J. J. Purcell, Lake Petroleum Co., Chicago.
J. P. Lanier, Skelly Oil Co., El Dorado, Kans.
C. L. Henderson, Vickers Petroleum Co., Wichita, Kans.
A. W. Deacon, St. Louis Surfacer, St. Louis.
W. B. Paper, Elliott Jones & Co., San Antonio.
M. R. Mandelbaum, Gray Process Corp., Newark, N. J.
George Widener, National Petroleum News, Cleveland, Ohio.
Lew Allen, Empire Refineries, Inc., Kansas City.
Roy S. Reed, The Kanotex Refining Co., Kansas City.
P. P. McKiraham, Continental Tank Car Co., Tulsa.
Walter Davis, Detroit Graphite Co., Detroit.
Harry I. Miller, Detroit Graphite Co., Chicago.
David Powell, Detroit Graphite Co., Kansas City.
John E. Casey, Acme Tank Car Co., Coffeyville, Kans.

REFINERS TOLD YEAR IS IN THEIR HANDS

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disposing of his heavier residum at a price consistent with its value, and this association, being impressed with the proposals made by Mr. Doherty, has interested itself in encouraging the development of a household burner that will utilize the heavier residuum as a domestic fuel. A joint committee of the Mid-Continent Oil & Gas Association, Association of Oil Burner Manufacturers, and this association, is now planning research work which it hopes will bring about the development of such a burner.

The committee is now actively working on a coefficient of expansion table, which will not only be correct but will be practical in its use by the refining industry.

Publicity Program

A year ago we called the attention of the members, or at least the board of directors, to the fact that some publicity should be given the oil industry, that we were not in the favorable position that we should be in the minds of the public, our customers, even of our friends. Naturally we were probably imbued with too much enthusiasm and believed that we could bring about favorable publicity in a very short time; however, we found that, while we had no direct opposition, so many divergent opinions appeared that progress has been rather slow in this direction. After a great many meetings, a plan has been devolved that we believe we can all subscribe to. About all, or practically all, the committee expects to do is to develop information and leave it to the different units in the industry to disseminate this information, as well as to the different individual organizations While it has taken a year to bring about the organization for this activity, it may be that it has been time well spent, since it appears that we have entire harmony and are in entire agreement now with the program, and it should be of untold benefit to the oil industry and to the American public.

Conservation Board

A few months ago, President Coolidge appointed a conservation board, made up of four members of his cabinet. It appears to be the opinion of these officials that considerable waste exists in the oil industry. The refining industry cannot be charged with contributing toward this so-called waste, unless it be such waste as is caused by failure to secure the essential value of its product, due to periods of overproduction, which condition we are not permitted to avoid on account of the ruling of the Department of Justice. On the contrary, the refining division of the oil industry has in the past few years made such wonderful strides in its operating science, and has thereby conserved for the use of American public such large percentages of motor fuel, that had it not been for such development, we would need at the present time to be producing more than twice as much crude oil, or else consuming less than one-half as much gasoline.

In addition to the strides made in refining methods which have tended to conserve motor fuel, the refining industry has developed uses for its heavier residuum much superior to those in existence a decade ago. We have frequently heard it mentioned that the packing industry is utilizing everything but the "squeal" of the pig which it slaughters. The refining industry has been developed to such a stage of perfection that it now utilizes everything but the odor escaping from the crude, and will soon devise means of making a commercial product out of this.

Overproduction the Enemy

Thus far we have dealt only with our activities the past year, yet if we may be permitted, a word of warning, let us please study the past more closely than we have, and thereby direct our future activities. Overproduction in our industry is, in our minds, our worst enemy. It cannot possibly be in the province of an association of this kind to direct the activities of the individual members, nor the membership in its entirety—in fact, we have made a studied effort to keep away from this very thing. However, we do believe it to be the duty of an association of this kind to gather and disseminate such information as will make it possible for the individual membership to more intelligently handle its own problems. We believe it to be entirely essential that statistical information be furnished our membership, and while not entirely interpreted for them, at least so assembled as will make it possible for the individual membership to profit thereby.

While we do not claim entire credit for the condition of our stocks of refined products in the last few months of last year, we nevertheless do claim some credit for calling the attention of the membership to the conditions that prevailed in previous years, and we believe that to an extent at least recognition was given it and we ended the consuming season of 1924 with stocks considerably lower than 1923 and thereby benefited the entire industry.

We trust that the industry will profit by its previous mistakes and we hope will realize the danger signals approaching. We can make this year just what we want it—it is in our own hands. We can create another condition parallel to last mid-summer and the mid-summer previous—on the other hand, we can heed the warning, study statistics as provided, and make it both a period of conservation and one for which we cannot be criticised either by our associates, our stockholders or our partners.

Mr. Dow's Annual Report

Several resolutions have been introduced in the Senate and House during the last few days which, if adopted, would inaugurate a new investigation of the oil industry. Some aim at an investigation by the Federal Trade Commission, others by a Committee of Congress.

It should be said to the credit of the oil industry, that it has never opposed any investigation for which there appeared to be the slightest necessity. It has taken the position that the public is entitled to know the facts about any important industry, that the oil industry has nothing to conceal, and it has hoped that out of some of these investigations a better knowledge and understanding of the industry's affairs might be gained by the general public. Not only has the industry not opposed these investigations, but it has repeatedly answered questionnaires of the Federal Trade Commission which it could have successfully resisted in the courts. The coal and steel industries refused to answer similar questionnaires, and the courts have permanently enjoined the Federal Trade Commission from requiring them to be answered.

This attitude of the oil industry toward Governmental investigations has received recognition from some of the authorities at Washington, but many members of Congress apparently remain uninformed as to the number of these investigations, their scope, or what they show. Perhaps even the industry itself

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HISTORY OF THE DEVELOPMENT OF FRACTIONATING TOWER EQUIPMENT

By W. A. Peters, Jr.
*of E. B. Badger & Sons Co.**

The art of distillation is an old one. We find pictures and descriptions of simple stills and condensers in Agricola's de Re Metalliia published about 1500. Apparently, stills for purifying sulphur and mercury had been in use for a long time even then. About 1800 apparatus for the separation of liquid mixtures, which was more effective than the simple still, began to come into use. We find the Coffey beer still with its large dephlegmator coil which served at the same time as a preheater for the beer. In the Pistorius still which consisted of three still bodies through which the liquid ran in series while the vapor from the first was bubbled through liquid in the second and vapor from the second through liquid in the third we see the beginning of the idea of the bubble tower. Pistorius also had an arrangement of baffled partial condensers or dephlegmators, which suggests the bubble tower. About the same time, that is, in the early part of the nineteenth century, Ilges in Germany developed a tower packed with round balls and Cellier developed the idea of baffles to the limit.

From these early towers the efficient French bubble type of plate was developed, starting with the spirally baffled plate of Egrot and the large single caps of some of the early makers and finally working up to the Barbet type in use in most alcohol refineries at present.

In many of these examples of distillation equipment several methods of obtaining the separation were employed, which has led to much confusion as to the relative values of the different methods available. We have, in general, three methods, namely, simple distillation, partial condensation and counter current scrubbing. We know that simple distillation is not a very effective means of separation and partial condensation is little better. The counter current scrubber is really the only effective means.

In all the towers mentioned the principle of operation is the same. They are simply a means for bringing into intimate counter-current contact a stream of liquid and a stream of vapor. We can imagine this being done in many ways, such as the following:

1. A spray of liquid falling through a current of vapor rising from a still.
2. A multitublar condenser with vertical tubes down which the condensate runs. The vapor enters at the base and passes up the tubes.
3. No. 2, with obstructions in the tubes. (The French have hung chains in them).
4. Packed towers.
5. Multiple stage sprays such as a bank of Coco's or Blair Campbell and McLean scrubbers.
6. Plate columns.
   (a) Bubbler plates.
   (b) Sieve plates.

Of these six methods, all but Nos. 4 and 6 can be eliminated as ineffective or impractical. No. 4, the packed column, looks like the ideal arrangement. In a tower you want intimate contact. Of course, the best way to get intimate contact is to provide a lot of surface for the liquid to spread itself on, then make it spread, and then pass the vapor over it counter current.

It was found, as might be expected, that the smaller the size of the packing pieces the more efficient is the tower. There is a practical limit, however, to decreasing the size of the filling pieces and this is reached at diameters of about seven-eighths-inch. Packed columns with glass rings three-eighths to one-half-inch diameter were used with good results as long as the diameter of the column was small. but for columns even 20 inches in diameter much trouble was experienced with the distribution of reflux at the top. and of vapor at the bottom. The efficiency of a column 22 inches in diameter was so low, due probably to poor distribution, that it had to be taken out and replaced by a plate column and no columns of larger diameter were tried.

The sieve plate column is ideal for some purposes, but it has to be built exactly right and run at a definite rate. As its name implies, it is made up of perforated plates. The velocity of the vapor passing through the perforations keeps the liquid from running through them and makes it pass across the plate and through the overflow pipes. Unless this velocity is sufficient, the plate leaks or dumps its load. This is a big advantage in many cases. Most still operators like to nurse a still along and run it as slowly as possible. If the still has a sieve plate column on it, it must be run to capacity to get any results at all. But this characteristic of seive plates bars their use in cases where the desired capacity is not always the same. Another limitation of sieve plate columns is corrosion of the perforations. It takes very little corrosion on a small hole to double its area, and as the area is increased, the capacity must be increased. On these two grounds the sieve plate column is practically barred from the petroleum field.

The bubble plate tower is the only all round fractionating device available. Its efficiency is the same for all capacities below the maximum and is unaffected by corrosion up to the point where the tower starts to leak. Where the efficiency can be accurately measured it is many times that of the best dephlegmator or partial condenser.

We have stated that the counter current scrubber or fractionating tower was the most efficient device known for separating mixtures of volatile liquids. But even the simple still gives some separation and it does not, therefore, follow directly that the fractionating tower should be used in petroleum refining. It would certainly not be worth while to separate materials that are to be sold mixed, especially when any separation by distillation even in the most efficient device imaginable requires a certain amount of heat. You can't have a counter current scrubber without the scrubbing liquid or reflux any more than you can get any good out of a dephlegmator if you lag it all up and don't condense anything in it.

The first question then is what products are demanded from the petroleum refinery and the second is the simplest apparatus that will give these products. To simplify the discussion, we will only take up one product, gasoline and will assume New Navy specifications for this gasoline. Moreover, we are only interested now in the distillation range and not in the chemical characteristics.

You are all familiar with the curve desired. End point 437 degrees Fahrenheit, 90 per cent point 392, etc., measured, by the way, with a total immersion thermometer immersed 3 inches so all temperatures are off from 1 to 7 degrees Fahrenheit.

To determine the composition of most fractions, an efficient laboratory fractionating apparatus which gave distillation curves within 1 per cent or better of the true distillation curve was used. It was found that the Engler curve crosses the true curve at about the 80 per cent point for most distillates and differs very little from the true curve above this point. The Engler was therefore used for determining the upper end and the more efficient apparatus for determining the lower end for all samples.

Considering first the product of simple distillation, we find that when a crude petroleum is distilled from the sides of which there is a negligible heat loss we get a product showing a very steep rise at the upper end of the Engler curve. To get a 437 degree Fahrenheit end point we must cut at about 320 degrees Fahrenheit and the difference between the 90 per cent point and the end point will be about 100 degrees Fashenheit. If a single continuous still or flash vaporization is used, the 90 per cent point may be still further from one end point. These fractions are lacking in about 45 per cent of material which was in the crude and which boils under 437 degrees Fahrenheit and most of this heavier material must go into the gasoline fraction to make it follow exactly the New Navy curve.

The best results that can be obtained with a dephlegmator or any combination of dephlegmators are little better. Differences of 80 to 90 degrees Fahrenheit between the 90 per cent point and the end point on the Engler curve of the distillate can be obtained for a one run product and the yield is probably 60 per cent of the total available material below 437 degrees. Vaporizing an excess of vapor in a still and then running this vapor to a dephlegmator to reduce the end point gives a production not very different from that which would be obtained by taking off less vapor in the first place. But it is not worth while to give further proof of this. You all know that simple distillation will not give New Navy gasoline in one running, nor will any arrangement of dephlegmators or condensers. The problem calls for the use of our third method of separation; that is, counter current scrubbing. And once we go to counter current scrubbing or fractionation in a tower, we can get any product we want, providing first, that is, that it is in the crude; second, that the tower is tall enough and properly arranged; and third, that we are willing to supply the very small extra amount of heat required. (If this heat is not supplied to a tower, many times the amount must be supplied for rerunning.)

With the simplest arrangement of tower imaginable, one in which the vapor from a still goes in at the base and comes out at the top and to the top of which the proper amount of reflux liquid is supplied, this reflux liquid coming out the base as a secondary product, it is possible to get gasolines of any desired end point with an Engler curve in which the difference between the 90 per cent and the end point is 50 to 60 degrees Fahrenheit. In other words, such a tower, if properly designed, will give within 10 to 15 per cent of the maximum possible yield of New Navy gasoline from any given crude.

By making minor modifications in the arrangement of this tower, a heads products, the Engler curve of which will fall directly on the New Navy curve, can be obtained. In fact, a curve flatter than the New Navy curve can be obtained by using a little more heat.

Many modifications and complications of the bubble tower can be made so that almost any desired products can be obtained in one running of a crude. With a comparatively simple arrangement, we have been able to make products, the Engler curve of which will pass through any two specified points.

*Delivered before Western Petroleum Refiners' Association, Kansas City, Mo.

GAIN OF 18.25 PER CENT IN GASOLINE OUTPUT

(Continued from Page 28)

170 and 1,561,740,042 gallons, representing increases of 5.21 per cent and 11.42 per cent respectively over 1923. Domestic demand during the year was 12,285,681,746 gallons, a daily average of 33,567,436 gallons. This represents an increase in daily average consumption over 1923 of 11.60 per cent. Stocks of these oils on hand the first and the last of the year were 1,515,034,711 and 1,670,508,938 gallons respectively, an increase during the year of 10.26 per cent.

The production of lubricants during 1924 was 1,154,926,677 gallons, a daily average of 3,155,537 gallons, an increase in daily average production over 1923 of 149,049 gallons, or 4.96 per cent. Exports were 382,343,409 gallons, an increase over 1923 of 30,744,362 gallons, or 8.74 per cent. Domestic demand during the year was 758,484,087 gallons, an increase over 1923 of only 2.51 per cent. Stocks on hand the first and last of the year were 242,785,070 and 257,336,238 gallons, respectively.

The production of paraffin wax during 1924 was 516,490,680 pounds, a daily average of 1,411,177 pounds, an increase over 1923 in daily average production of 132,693 pounds, or 10.38 per cent. Exports during the year totaled 382,820,015 pounds, an increase of 53,027,466 pounds, or 16.08 per cent. Exports during the year comprised 74.12 per cent of the production. Domestic demand during the year was 221,577,294 pounds, an increase of 31,695,523 pounds or 16.69 per cent. Stocks on hand at the first and last of the year were 164,706,430 and 89,666,408 pounds respectively, a decrease during the year of 45.56 per cent.

During 1924 the refineries of the United States ran to stills 507,954,122 bbls. of domestic crude oil and 45,765,226 bbls. of foreign crude oil, a total of 643,719,349 bbls., a daily average of 1,758,796 bbls. The average number of refineries reporting to the Bureau of Mines each month was 265, or an average daily crude oil capacity of 2,236,055 bbls. Thus the refineries operated on an average of 78.7 per cent of their aggregate capacity during 1924.

REFINERS TOLD YEAR IS IN THEIR HANDS

(Continued from Page 117)

will be surprised when it is recalled that there have been 12 completed investigations in the last eight years, all dealing with phases of major importance.

In these investigations agents of the Government have made searching inquiries for violations of law. Aside from the pending suits involving cracking-process patents and the leasing of Naval reserves, nothing has been developed in any investigation deemed to indicate violations of law. On the contrary, both the Department of Justice and the Federal Trade Commission are in position to inform Congress and the public, if they would, that they have found no monopoly in the oil industry, no combination in restraint of trade, no conspiracy in violation of any of the anti-trust laws, but that, on the contrary, there exists in the producing, refining and distributing branches of the industry, the keenest kind of competition; that overproduction in recent years has brought extremely low prices to the public and disastrous financial consequences to many economically operated companies.

New Investigations

With all of this information at hand and available, we are confronted with demands for a new investigation. Of course, the moving cause was the recent advance in gasoline prices.

One fact every one ought to know about oil is that price will produce it. The only thing that is holding oil in the shales is a price that will pay to extract it. The only thing that is holding oil in many undiscovered sands is a price that will pay the wildcatter to drill for it. Give the refiner a price that will pay him to buy crude and refine it and he will turn out a flood of gasoline with remarkable speed. The broken markets at the height of seasonal consumption in the summer of 1923 and again in 1924 are proof enough that the gasoline situation can change quickly and that no company or group of companies does or can control it. Production will respond to price. Therefore, the best guarantee of low prices of gasoline is advancing prices for gasoline. So when prices advance, your member of Congress, if he understood the elementary facts of the situation, would tear up his resolution proposing an investigation and tell his constituents not to worry. It is the refiner who should watch his step.

The situation again emphasizes the need of a better public knowledge of the oil industry and the importance of an adequate channel through which information may be made available. There never has been a more crying need of a public relations committee than in the past few weeks. When the oil industry's service to the public and the conditions surrounding its operations are better understood we shall have fewer demands for Government investigations.

Welcomes Conservation Board

I look upon the Federal Conservation Board as a real opportunity for the industry. It is a real opportunity for several reasons.

In the first place, no industry exists for itself alone. It is service by which we are judged.

Do you realize that in the course of all the investigations which we have experienced, the Federal Oil Conservation Board is the first to ask what we do, not what we earn? Do you realize that the board is the first to ask us about our service to our fellowmen? Is not that an opportunity? They are looking for waste, waste at every point from the oil sands to the exhaust pipe of your car. That is an absolutely justifiable inquiry. Our petroleum is a great natural heritage

and no one who condemns the spendthrift in a man can fail to condemn it in a nation. If there is waste which can be avoided, let us remember that there is no industry more resourceful than our industry, none more readily adaptable to new conditions.

Industry Consulted

Another reason for regarding the work of the Federal Oil Conservation Board as an opportunity is the spirit in which it is being conducted. For the first time in all of the investigations of the oil industry the informed opinion of the industry itself has been sought. The board has not approached its study with preconceived ideas, it has no prejudice or antagonism. It is refreshing to me to talk with members of the board and their sub-committeemen, and find they believe in the basic honesty of American business men, that they want to cooperate and be geneuinely helpful. Secretary Work has stated to me in so many words that there is no intention or desire the board's inquiry shall lead to regulation of the industry.

Freight Rate Investigation

Too little attention has been paid to the joint resolution recently adopted by Congress and signed by the President. One of its more important provisions says:

"It is hereby declared to be the true policy in rate making to be pursued by the Interstate Commerce Commission in adjusting freight rates, that the conditions which at any given time prevail in our several industries should be considered in so far as it is legally possible to do so, to the end that commodities may freely move."

This new rule of rate making obviously requires the commission to give some consideration to the economic conditions prevailing in an industry at the time. The economic experience during the past two or three years of Mid-Continent refiners who are peculiarly dependent on rail transportation to reach their markets, would be pertinent evidence in a rate case, under the rule so long as these conditions existed.

The resolution directs the commission to enter upon a general freight rate investigation, and

"in making any change, adjustment, or redistribution the commission shall give due regard, among other factors to the general and comparative levels in market value of the various classes and kinds of commodities as indicated over a reasonable period of years, to a natural and proper development of the country as a whole, and to the maintenance of an adequate system of transportation."

The railroads are now protected by law against a reduction in their general level of freight rates, but there will be reductions from time to time in rates on particular commodities and the resulting loss in revenue may be made up by increases in rates on other commodities. The resolution directs the commission to investigate the relative rate level of all commodities. The contest of shippers against carriers has shifted its ground. Hereafter, if the present tendency contiues, it will be commodity against commodity. If rates on products of agriculture are to be reduced what commodities will bear the increase? The suggestion was made in the recent Western grain rates case that gasoline could and should pay higher rates. This suggestion has been repeated in other places and is based on the thought that gasoline is luxury. If my judgment is correct those who are interested in the transportation of petroleum and its products must begin to study the basic facts of that commodity from an economic and transportation standpoint. It will not be a case of refiner against railroad, or refiner against refiner, it will be oil against coal, oil against all other commodities.

GALENA SIGNAL OIL

J. C. Tipton was elected director of Galena Signal Oil Co. at its annual meeting, replacing H. S. Skinner. Other directors and the officers were reelected.

TREATING OF REFINERY PRODUCTS IMPORTANT

(Continued from Page 107)

treating are hydrogen sulphide, previously mentioned and a class of bodies known as mercaptans. The mercaptans are oily liquids, not so easily removed as the gas, hydrogen sulphide. Before describing the various reactions I may illustrate, by reference to some of the better known substances, something of the nature of these bodies called mercaptans.

The carbon compounds, methane, ethane, propane, and similar substances are well known in the industry. Methane (CH_4) and ethane (C_2H_6) are the most prominent parent substances responsible for numerous thousands of compounds, are also khown as methyl hydride (CH_3H) and ethyl hydride (C_2H_5H) respectively. The ethyl part is known as a radical and may form part of the name of closely allied substances; methyl alcohol (CH_3OH), ethyl alcohol (C_2H_5OH), and ethyl ether ($(C_2H_5)_2O$) are examples. Water when written H-O-H shows its relation to hydrogen sulphide H-S-H. An alcohol is of the type R OH; and ether R-O-R. As sulphur replaces oxygen in the water type substances it may do so in many compounds. The bodies R-SH are mercaptans, and C_2H_5SH is ethyl mercaptan.

Where a mercaptan is treated with caustic soda the sodium mercaptide is formed and as it is soluble in oil the mere addition of caustic soda does not sweeten. However, the addition of the doctor solution, sodium plumbite, causes a percipitate and the clear oil is sweet, because the resulting lead product is dissoluble in the oil. When the heavy dark mass forms and is easily washed away with water, leaving a clear liquid, there is no need for adding sulphur, indeed additions of sulphur under such circumstances will simply dissolve the sulphur in the final product and thus prove detrimental. This mistake is often responsible for a bad corrosion test shown by some gasoline.

When the mercaptans are present alone, that is without sulphur, or hydrogen sulphide, the percipitate collecting on the surface of the doctor solution, after its addition to the gasoline, is of a yellowish color. However, upon the addition of a pinch of powdered sulphur the color rapidly changes to black. These changes may be represented by:

$$\left.\begin{matrix}C_2H_5SH\\C_2H_5SH\end{matrix}\right) \text{plus } Na_2Pho_2 \text{ equals } \left.\begin{matrix}C_2H_5S\\C_2H_5S\end{matrix}\right) \text{Pb plus S Na OH}$$

(yellow)
(insoluble)

$$\left.\begin{matrix}C_2H_5S\\C_2H_5S\end{matrix}\right) \text{Pb plus S} \quad \text{equals } C_2H_5S \left.\begin{matrix}\\C_2H_5S\end{matrix}\right) \text{plus PB S}$$

(soluble in oil) (black)

The diethyl sulphide is soluble in gasoline and therefore sulphur is not removed by this kind of treatment, although the product would pass sweet to the doctor test. Sweetening does not always remove all of the sulphur from the gasoline, in fact the operation may take place without removing any of the suplhur. The only change is that of odor. The mercaptan has a distinctly bad odor, while the disulphide compound is almost free from odor.

The lighter distillates from crude and pressure distillates usually contain sufficient free sulphur to complete the reaction, but the kerosenes and higher fractions need additional sulphur, because the heavier mercaptans do not contain sulphur in the same proportion.

In this reaction it appears that the black percipitate aids in the change simply by its presence and the powdered sulphur is necessary for the formation of the black compound when treating such stocks as kerosene.

CORROSION TROUBLES; CAUSES, CORRECTION

(Continued from Page 107)

diameter of the pipe and we can also use steam. The use of cores in pipes appears impracticable. In pipe stills, however, we have another aid in using countercurrent flow. If the water is evaporated gradually in the cooler pipes, there is apparently much less deposit of its dissolved salts than in case it is evaporated suddenly in the hotter pipes. Also in case it is possible to evaporate the water in heat exchangers before the crude enters the still there is a greater tendency for the salt to remain suspended in the oil. Finally, if we have a salt deposit it can be effectively removed by periodical washing with hot water. At Wood River, we have practiced this for the last six years to good advantage. Incidentally, with a Mid-Continent crude containing from .03 to .5 grams salt per liter, our newer pipe stills using counter-current flow are washed about every 40 to 60 days, whereas the older ones, not having countercurrent flow. are washed every 10 to 15 days. The washing requires a 24-hour intermission from stream to stream, and the length of the intervening periods is governed by the amount of deposit found after previous periods and by the salt content of the crude oil as determined in the laboratory. The amount of deposit is calculated as NaCL by titrating the chlorin content in a sample of the wash water. The amount of deposit varies, of course; in our new units this is generally from a trace up to 50 pounds for one pipe heater. In the old units amounts upwards of 100 pounds were not unusual, although we tried to keep them lower. Practically all of this deposit is thus removed without taking off the return bends.

Furnace Temperature

Lower furnace temperatures can be maintained by using more excess air, which, however, is wasteful from a fuel economy standpoint and paradoxical as regards the quantity of corrosive agent supplied, although, I have explained above, this last point does not seem to make any difference. A better policy is to have the furnace constructed with a large combustion volume, using plenty of heating surface to quickly take up the radiant heat, preventing concentration of the latter upon small sections of surface.

Where the corrosion problems are due to the cooling water used, they are not peculiar to the petroleum industry, and will not be considered further at this time. Where oil is used as a cooling medium, little trouble seems to be encountered unless the temperature is high enough to cause, in the case of crude oils, the decomposition of magnesium chloride with the formation of hydrochloric acid, in which case the effect is similar to that encountered at the internal surface from the same cause.

Main Corrosive Agents

The main corrosive agents acting upon the internal surfaces are hydrochloric acid and sulphur compounds. There are probably others about which we know very little.

Most crude oils containing salt contain certain amounts of magnesium chloride. When the latter is heated to above 106 degrees C, in the presence of water it tends to decompose with the formation of hydrochloric acid and insoluble magnesium oxychloride according to the following equation:

$$2Mg\ Cl_2 + H_2O = Mg_2\ O\ Cl_2 + 2\ H\ CL$$

The hydrochloric acid apparently does very little damage as long as it is in the form of a gas, even when water vapor is present. But as soon as water in the liquid form is present, it dissolves the acid, forming a corrosive solution, and the effect is no doubt well known to all of you.

We can attempt to eliminate the corrosive substance (a) by using a clean crude from which the salt water has been settled out as much as possible; (b) we can neutralize the acid. For this purpose caustic soda or sodium carbonate or bi-carbonate has been added to the crude, but this, of course, tends to increase the formation of deposit in the still. We can also neutralize the hydrochloric acid in the vapor form either by passing it through a tower containing alkaline material, or by adding ammonia to the vapors. The latter method has been used extensively with good results. It is especially practicable when using a fractional condensation system. where all of the ammonia can be added into the main vapor line. Either ammonia gas or solution may be used. The latter method was found cheaper and more easily controlled. Enough ammonia is added to keep the water of condensation, which separates from the distillates, slightly alkaline. The amount will depend, of course, on the amount of hydrochloric acid formed.

Second, we may use corrosion resisting material for our condensers, especially those where water condenses from among the oil vapors.

With regard to sulphur corrosion; this is much less troublesome with Mid-Continent crudes than it is with Mexican and other high sulphur crudes. Very little appears to be known as to the chemical mechanism, whether the action is by hydrogen sulphide, organic sulphur compounds, or by intermediate products formed by oxidation or otherwise. It has been noticed that sulphur corrosion is distributed more evenly over the metal, whereas hydrochloric acid corrosion more usually gives rise to pitting.

Cracking Plant Troubles

Considering now the corrosion troubles encountered in cracking plant operation; we find similar ones as are met in the topping plants, but accentuated by the special conditions of high temperature and high pressure. The high pressure in itself is not so much a contributing factor, but it makes the whole problem more serious on account of the results which may follow in case corrosion reduces the strength of the apparatus beyond safe limits. Furthermore, in view of the large amount of mechanical cleaning which generally has to be done symptoms of corrosion may be aggravated or masked by mechanical wear, and in addition to this the prolonged exposure to high temperatures is more likely to induce structural changes in the metal, apart from corrosion, than is the case in topping plants.

First considering again the heating surface corrosion, I can refer to what has been said under topping plants, with the addition that in cracking the deposit of course, is mostly coke, the remedy therefore periodical mechanical cleaning, although proper furnace construction is a very important point. Corrosion of the internal surface is here found more than in topping, and appears to be mostly due to sulphur compounds.

Hydrochloric acid corrosion may also be encountered in cracking plants, especially when running crude oils. After an experiment on heavy Smackover crude some of the water in the pressure distillate receiver was analyzed and found to contain 4.84 grams per liter of chlorine, in the form of iron chloride and hydrochloric acid. The same water contained .071 gram of sulphur per liter, most of the sulphur no doubt having escaped in the form of hydrogen sulphide, with the gas.

Summarizing, I believe that when cracking most Mid-Continent gas oils and fuel oils corrosion will not be a very serious problem, although I wish to stress the absolute necessity of frequent inspection. When cracking Mexican oils, and no doubt others, corrosion may prove to be a very expensive problem, and for these cases the possibilities of using special metals or specially treated steel should be investigated.

NEW ASSISTANT SECRETARY

The nomination of John H. Edwards to be Assistant Secretary of the Interior to succeed Francis M. Goodwin has been sent to the Senate by the President.

Pays for Itself Every Time You Use it

The upper part of the clutch arrangement is attached to the bottom of the working valve crown —in place of the ordinary valve bottom. The lower part is screwed to the Standing Valve Crown.

In pulling the standing valve, the rods are given a few turns, which brings the clutch in engagement. The standing valve comes up on the *first run*. The extra run is saved.

If you are among those who believe that even small investments are worth while if they pay 600% returns, you'll equip every pumping well with this time-tested and absolutely guaranteed Norris money-saver. At your supply house or direct.

Manufactured and Guaranteed by

NORRIS BROTHERS, Inc.

Manufacturers of Oil Well Pumping Equipment

Robinson, Ill.

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20,000,000 Feet of Gas and Salt Water From Bazette Well

KERENS, Tex., Mar. 4.—A surprise was sprung on Tuesday when the Atlantic Oil Producing Co., Penn and Marland Oil Co.'s No. 1 Abshur, in the Bazette district blew in as a gas well with an accompaniment of salt water spray. The well was a total depth of 3,086 feet. It is believed the gas is coming from 3,060 to 3,080 feet and the salt water from the last 8 feet. The quantity of salt water coming from the hole was estimated at 30 bbls. an hour. The well was entirely shut in and operations shut down for the time. The nearby well of the Humphreys Boyd Oil Co. on the Walthall farm was drilling plug on Tuesday at a total depth of 3,014 feet and will be completed with cable tools.

The presence of gas in the test on the Abshur farm has changed the recently prevailing opinion as to the tests and the Humphreys Boyd Oil Co.'s location is now looked upon with favor by those holding nearby acreage and with considerable alarm by producers whose interests are elsewhere than in Bazette.

CONTINUOUS TYPE OF PRESSURE PROCESS

(Continued from Page 111)

during the coming year. The other litigation, that is, the suits in which the Standard Oil Co. of Indiana, and The Texas Co. are plaintiffs, have not yet reached a stage at which it is possible to forecast when they will be determined. The suit brought by the Government in June of 1924, in which the Standard Oil Cos. of Indiana and New Jersey, the Standard Development Co., The Texas Co., and the Gasoline Products Co. were named as primary defendants, and the licensees of these companies, embracing some forty of the principal refining units of the industry, has as yet proceeded through only its initial formal stages.

The sane view of all of these legal controversies seems to be that taken by the bulk of the industry, that is, that they necessarily complicate a situation which is an inherently difficult one, both from a business and technical standpoint, but that they should not and will not be permitted to halt the technical and economic development of cracking.

LEGAL

ADVERTISEMENT FOR BIDS TO PURCHASE CRUDE OIL AND NATURAL GAS GASOLINE FROM WELLS OPERATED BY THE INTERIOR DEPARTMENT IN THE RED RIVER BED.

SEALED PROPOSALS will be received by the Secretary of the Interior until noon of March 23, 1925, for the purchase of Oil and Natural Gas Gasoline obtained by the Interior Department from wells under its jurisdiction in the Red River Bed. The bids on oil and natural gas gasoline should be submitted separately.

At the present time the daily production of crude from these wells is about 650 barrels and the natural gas involved is about 16 million cubic feet per month, having a gasoline content of about 5¼ gallons per thousand cubic feet of gas.

Bidders should indicate their price for oil in terms of a differential with respect to the highest price paid by any one of the following companies, for oil of like gravity from the fields in Wichita County, Texas.

Prairie Oil & Gas Co.
Texas Pipeline Co.
Humble Pipe Line Co.
Magnolia Petroleum Corp.

The contractor for the oil will be required to accept it at the gage tanks now installed on the property and subject to the gaging methods and deductions now in effect.

The bid on natural gas gasoline should be a percentage of the total marketable gasoline recoverable, to be paid either in gasoline or cash as the Department may elect. If payment is taken in cash the price shall be the same as that currently received by the contractor for his share of the gasoline. The natural gas will be delivered on the lease to the successful bidder at the wells or gas traps in a manner now in effect and the contractor will be required to return the dry gas at a suitable point or points to the gas distributing system, now installed on the property. The contractor will be allowed to use a reasonable amount of dry gas for plant operation, the remainder to be returned to the properties as fuel.

Payment for either oil or natural gas gasoline shall be made at least twice a month.

As part or all of the property involved may pass at any time from the direct operation of the Department to lessees, no specific guarantee as to the duration of the contracts can be given except that they will cover such oil and natural gas gasoline as may be produced while these properties are operated by the Interior Department. A clause will be inserted in the contract so that in the event the oil or gas applicable to the proposed contract shall be reduced to one-half the original quantity or less because of such leases to private operators, the contractor will have the right to withdraw from his agreement by giving sixty days' notice in writing to the Secretary of the Interior. This clause will not apply to ordinary decline of production. Bidders are required to submit individual bids for the oil and for the natural gas gasoline. There is, however, no objection to any bidder submitting a bid on both oil and natural gas gasoline.

The successful bidder will be required to furnish a surety bond in the amount of $50,000 on oil and $4,000 on natural gas gasoline for the faithful performance of his agreement.

The right is reserved to reject any or all bids as the interest of the Government may require. Proposals must be securely enveloped and marked, "Proposals for the Purchase of Oil and Natural Gas Gasoline from Red River Bed," and addressed to the Secretary of the Interior, Washington, D. C.

WELL MAKES 500 BBLS. NORPHLET DEEP SAND

SHREVEPORT, La., March 3.—Probably the best well yet completed in the deep sand area of the Norphlet district was brought in by Broderick & Calvert, February 27. It was completed at 2,405 feet and is making 500 bbls. of clean oil with no water. Previous completions in the deep sand have come in flowing several thousand barrels of fluid with only 10 per cent or less of it oil. The well is No. 2 Bradford in Section 8-16-15, in the old gas territory, south of Smackover and north of Norphlet, and is making 21 gravity oil. It blew in while preparing to set liner and is flowing by heads.

Another deep well was completed yesterday when No. 6 Graves, drilled by Hickman and others blew in while they were going out of the hole to change bits, and is flowing by heads at the rate of 400 bbls. a day, 21 gravity oil. This is in Section 3-16-15 and completed at 2,368 feet. It is also making clean oil, practically without water or b.s., and the two successful producers will be followed by deep drilling throughout this territory.

PRAIRIE'S FEBRUARY SHIPMENTS

The Prairie Pipe Line Co.'s deliveries and shipments for the month of February were 4,322,556.49 bbls., or an average of 154,377 bbls. a day. January's shipments were 4,441,290 bbls., or an average of 143,267 bbls. a day, indicating a gain in February of 11,110 bbls. a day or 311,080 bbls. for the month. February showed the largest daily average shipments since June, 1923, when the average was approximately 158,000 bbls. a day.

GOOD NEW YORK WELL

BOLIVAR, N. Y., Mar. 1.—Hardman, Thompson & Miller of Richburg have completed a well in the Hazzard farm, Pleasant Valley district, that did a flow of 150 bbls., besides filling the tubing, in 24 hours. This is one of the best wells completed in this field this year. The well was shot Saturday with 100 quarts and put to pumping at 3:30 o'clock Monday afternoon. It was drilled not far from the Pleasant Valley road, on part of the lease not considered very good.

WORD WAS OMITTED

In the advertisement of Joseph Greenspon's Sons Iron & Steel Co., appearing on page 67 of this issue the word "and" was inadvertently omitted in the fourth line of the list of casing offered for sale. That line should read "80,000 feet 10" 40-lb. standard and D. B. X. casing."

MEAD S. JOHNSON
PETROLEUM GEOLOGIST AND MINING ENGINEER
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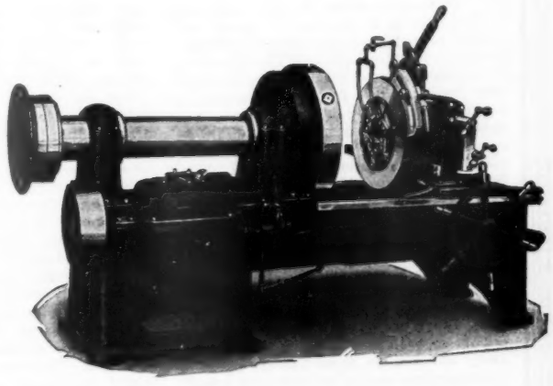

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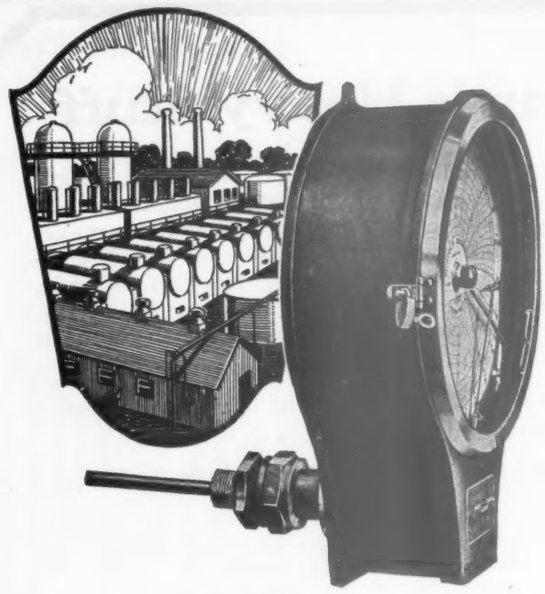

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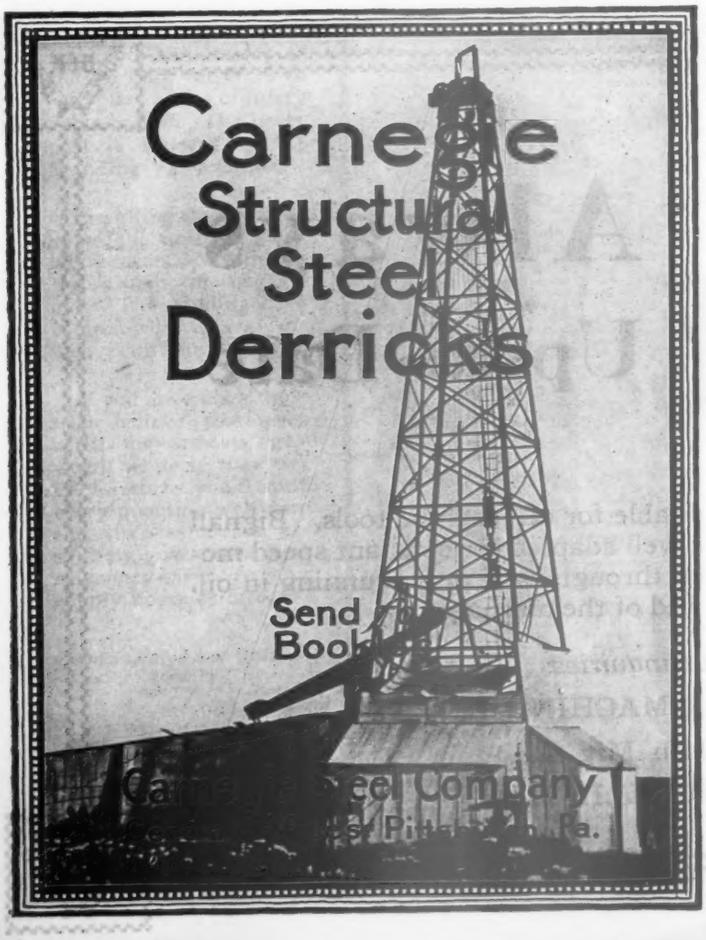

MINES BUREAU SAYS HELIUM BILL NOT STEP TO GOVERNMENT IN OIL

By Dr. D. A. Lyon
Acting director, United States Bureau of Mines, for H. Foster Bain, Director

In the Oil and Gas Journal of January 22, 1925, page 114, is a communication from one of your readers, which is referred to under the title, "Says Bill Gives Bureau of Mines Power to Produce and Sell Oil."

May I ask your permission to reply to two or three of the statements quoted from your reader. In the first place, the helium bill (H. R. 11549 of the 67th Congress, second session) is not now pending in Congress, as he states. It expired with the 67th Congress and was never reported out from the Public Lands Committee, where hearings were held. The present helium legislation pending in Congress is H. R. 5722, which has already passed the House and been referred to the Senate. For the benefit of your readers I enclose a copy as it passed the House. You will note that it is a very much shorter and simpler bill than the one published in your issue of January 22. The only reference to the sale of byproducts is that contained at the end of Section 3, where some authorization to dispose of byproducts is clearly necessary; otherwise, if found, they would have to be retained by the Government, whether needed or not, or thrown away.

Not Entering Oil Business

It is not only not the intention of the Bureau of Mines to "produce and sell oil and to drill and exploit the public lands for this purpose," as stated by your reader, but the bill amply provides against the adoption of any such policy. It specifies that only such sums as might accrue from the sale of helium itself could become revolving for the purposes of the bill. All money received from the sale of gas and oil would be turned into the general Treasury and hence it would not be possible to build up a fund that would enable the Government to "enter the oil business."

Furthermore, in the exploration for helium the Government does not expect to, and the appropriation that might be asked for would not be sufficient to permit "wildcatting" either for helium or oil. If a conservation fund is provided by Congress it is expected to spend this largely in acquiring gas reserves already known to contain helium. The discovery of helium is so rare and purely accidental that "wildcatting" for it will never be justified. Naturally, helium reserves will have to be acquired in fields containing no oil, and usually in fields containing very lean or incombustible gas. The fund proposed would not be sufficient to acquire proven oil structures or good gas fields. Drilling will be confined largely to proving up the helium-bearing structures that might be acquired or considered for acquisition and these structures have been found by experience usually to contain no oil and rather poor gas. In general, the policy in acquiring helium reserves would be to keep as far away as possible from known probable oil structures, either on public or private lands, for obvious reasons. It is, therefore, not expected that oil will be discovered as a byproduct, but evidently if it should be, it cannot be thrown away, and will have to be used for Government purposes or sold, as provided for in the Act; and cannot be sold if it can be used by the Government. I therefore do not feel that the fears expressed in the communication of your reader in your issue of January 22, have any real foundation.

Processes Complicated

Your contributor further states, "The processes of extraction have become so simplified that extraction equipment is relatively inexpensive and anyone capable of operating gasoline separating systems can produce helium." Without wishing to discourage anyone from entering this field who desires to do so, I am unable to agree with the statement. As it exists at the present time, the process would have to be characterized as complicated and rather expensive, on account of the cost of the equipment required and the high pressures and low temperatures at which the operations must be carried out. During the past year the process has been simplified and improved both in the Bureau of Mines and in the Linde-Navy plant at Fort Worth. The cost of helium has also been much reduced, but I do not believe that the operation has yet reached the stage where the general gas operator could contemplate going into the business of helium recovery. It is our hope that this condition will be arrived at at some time in the future, but it would be misleading to state that such is the present situation.

Text of the Bill

The text of the bill follows:

An act authorizing the conservation, production, and exploitation of helium gas, a mineral resource pertaining to the national defense, and to the development of commercial aeronautics, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States in Congress assembled, that for the purpose of producing helium with which to supply the needs of the Army and Navy and other branches of the Federal Government, the Secretary of the Interior is hereby authorized to acquire land or interest in land by purchase, lease or condemnation, where necessary or cannot be purchased from private parties at a less cost, to explore for, procure, or conserve helium-bearing gas; to drill or otherwise test such lands; and to construct plants, pipe lines, facilities, and accessories for the production, storage and repurification of helium: Provided, that any known or probable helium gas-bearing lands on the public domain not covered at the time by leases or permits under the act of February 25, 1920, entitled "An Act to promote the mining of coal, phosphate, oil, oil shale, gas and sodium on the public domain," may be reserved for the purposes of this act, and that the United States reserves the ownership and the right to extract, under such rules and regulations as shall be prescribed by the Secretary of the Interior, helium from all gas produced from lands so permitted, leased, or otherwise granted for development.

Sec. 2. That the Secretary of the Navy is authorized to maintain and operate helium production and repurification plants, together with facilities and accessories thereto; to store and care for helium; that the Bureau of Mines, acting under the direction of the Secretary of the Interior, is authorized to conduct exploration for helium on and from the lands acquired or set aside under this act; to conduct experimentation and research for the purpose of discovering helium supplies and improving processes and methods of helium production, repurification, storage and utilization.

Sec. 3. That any surplus helium produced may, until needed for Government use, be leased to American citizens or American corporations under regulations approved by the President: And provided further, that all moneys received from the sale or leasing of helium shall be credited to a helium production account and shall be and remain available for the purposes of this section; and that any gas belonging to the United States after the extraction of helium, or other by-product not needed for Government use, shall be sold, and the proceeds of such sales shall be deposited in the Treasury to the credit of miscellaneous receipts.

Sec. 4. That hereafter no helium gas shall be exported from the United States, or from its possessions, until after application for such exportation has been made to the Secretary of the Interior and permission for said exportation has been obtained from the President of the United States, on the joint recommendation of the Secretary of War, the Secre-

(Continued on Page 134)

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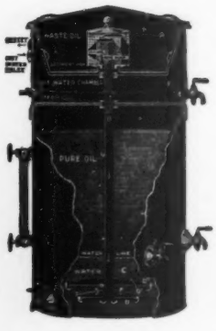

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GULF PORT SHIPMENTS IN JANUARY SHOWED DECREASE OF 603,237 BBLS.

HOUSTON, Tex., Feb. 28.—The movement of refinery products and crude from the Gulf ports during January totals 14,707,103 bbls., a decrease of 603,237 bbls. from the December record. Refinery products aggregated 8,723,226 bbls., or 858,895 bbls. less than during December and crude consignments total 5,983,877 bbls., an increase of 241,766 bbls.

The Beaumont-Port Arthur district handled 6,662,672 bbls. of the total and the Texas City-Houston ship channel plants 4,335,068 bbls. The balance was loaded at Baton Rogue.

The following table shows the shipments of each company:

FROM PORT ARTHUR
By The Texas Co.
Refined

Destination	Gross Bbls.
Coastwise	983,038
Export	478,137
Total	1,461,175
Crude	
Coastwise	332,062
Export	26,663
Total	358,725

FROM PORT ARTHUR
By Gulf Refining Co.
Refined

Coastwise	2,302,274
Export	75,534
Total	2,377,808

FROM BEAUMONT
By Magnolia Petroleum Co.
Refined

Coastwise	*1,140,875

*674,236 bbls. manufactured fuel oil included.

Crude

Coastwise	75,871

FROM SABINE
By The Sun Co.
Crude

Coastwise	205,022

FROM PORT ARTHUR
By Atlantic Oil Producing Co.
Crude

Coastwise	238,654

FROM NECHES TERMINALS (Orange)
By Humble Oil & Refining Co.
Crude

Coastwise	134,606

FROM TEXAS CITY
By Humble Oil & Refining Co.
Crude

Coastwise	1,267,508

FROM TEXAS CITY
By Vacuum Oil Co.
Crude

Coastwise	234,225

FROM TEXAS CITY
By Marland Refining Co.
Refined

Coastwise	71,459
Exports	65,251
Total	136,710
Crude	
Coastwise	110,281
Exports	141,947
Total	252,228

FROM TEXAS CITY
By Swiftsure Petroleum Co.
Crude

Coastwise	282,091
Exports	59,330
Total	342,421

FROM BAYTOWN (Refinery)
By Humble Oil & Refining Co.
Refined

Coastwise	1,070,888
Crude	
Coastwise	392,795
Exports	124,207
Total	516,912

FROM HOUSTON
By United Central Oil Corp. (Pasadena Docks)
Crude

Coastwise	**278,076

**149,717 bbls. account Atlantic Refg. Co.
78,275 bbls. account Beacon Oil Co.
18,203 bbls. account Cosden Sales Corp.
31,881 bbls. account Industrial Alcohol Co.

FROM HOUSTON
By Galena-Signal Oil Co. of Texas
Refined

Coastwise	108,000
Export	108,000
Total	216,000

FROM HOUSTON
By Deepwater Refining Co.
Refined

Exports	20,000

FROM BATON ROUGE (Refinery)
By Standard Oil Co. of Louisiana
Refined

Coastwise	882,894
Export	1,238,223
Total	2,122,117
Crude	
Coastwise	1,587,246

FROM SMITH'S BLUFF
By Pure Oil P. L. Co.
Refined

Coastwise	171,106
Export	6,547
Total	177,653
Crude	
Coastwise	492,283

SUMMARY OF WATER SHIPMENTS FROM GULF PORTS DURING JANUARY, 1925

Company and Port—	Refined	Crude	Total
The Texas Co., Port Arthur	1,461,175	358,725	1,819,900
Gulf Refining Co., Port Arthur	2,377,808	.....	2,377,808
Magnolia Petroleum Co., Beaumont	1,140,875	75,871	1,216,746
The Sun Oil Co., Sabine	.....	205,022	205,022
Atlantic Oil Producing Co., Port Arthur	.....	238,654	238,654
Humble Oil & Refining Co., Neches Terminal	.....	134,606	134,606
Humble Oil & Refining Co., Texas City	.....	1,267,508	1,267,508
Vacuum Oil Co., Texas City	.....	234,225	234,225
Marland Refining Co., Texas City	136,710	252,328	389,038
Swiftsure Petroleum Co., Texas City	.....	342,421	342,421
Humble Oil & Refining Co., Baytown	1,070,888	516,912	1,587,800
United Central Oil Co., Houston	.....	278,076	278,076
Galena-Signal Oil Co., Houston	216,000	.....	216,000
Deepwater Refining Co., Houston	20,000	.....	20,000
Pure Oil Co., Smith's Bluff	177,653	492,283	669,936
Standard of Louisiana, Baton Rouge	2,122,117	1,587,246	3,709,363
Total January, 1925	8,723,226	5,983,877	14,707,103
Total December, 1924	582,121	5,742,111	15,324,232
Difference	858,895	241,766	617,129
Exports			
The Texas Co., Port Arthur	478,175	26,663	504,838
Gulf Refining Co., Port Arthur	75,534	.....	75,534
Humble Oil & Refining Co., Baytown	.....	124,207	124,207
Galena-Signal, Houston	108,000	.....	108,000
Pure Oil Pipe Line Co., Smith's Bluff	6,548	.....	6,548
Deepwater Refining Co., Houston	20,000	.....	20,000
Standard of Louisiana, Baton Rouge	1,238,223	.....	1,238,223
Swiftsure Petroleum Co., Texas City	.....	59,330	59,330
Marland Refining Co., Texas City	65,251	141,947	207,198
Total January	1,991,731	352,147	2,343,878
Total December, 1924	1,323,251	417,390	1,740,641
Difference	668,502	65,243	603,237

WHITE EAGLE SALES REFLECT CONDITIONS

While the total sales of all products of the White Eagle Oil & Refining Co., Kansas City, Mo., during 1924 exceeded the total for 1923 by 8,695,330 gallons, an increase of about 6 per cent, the total value of those products in 1924 was nearly a million dollars less than in the previous year, according to the annual statement of the company, just published. This reflects the unsettled conditions of last year, the statement says, when bad weather in the spring, followed by a surplus of oil, political agitation and other causes brought about a decline in prices.

The total sales of the company in 1924 were 155,867,915 gallons, of which amount 66,497,697 gallons were handled through its 565 bulk and service stations. The increase of station sales over 1923 was 11 per cent, while 116 stations were added during the year.

The company's net income for 1924, after deducting depreciation, depletion and Federal taxes was $1,029,385.69, a decrease of a little more than $300,000 from the 1923 figures. The regular dividend of $920,000 was paid.

One refinery was added in 1924, located at Casper, Wyo., and 23 miles of pipe line was laid, making the total mileage 253. Tank car shipments were 15,678 last year, compared with 13,894 in 1923.

Due to the company's policy of inactivity in development during the period of depression last year, crude oil production declined to 570,578 bbls. for the year while in 1923, it was 1,024,433 bbls.

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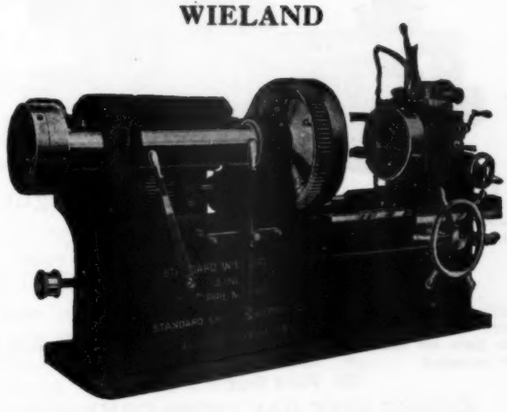

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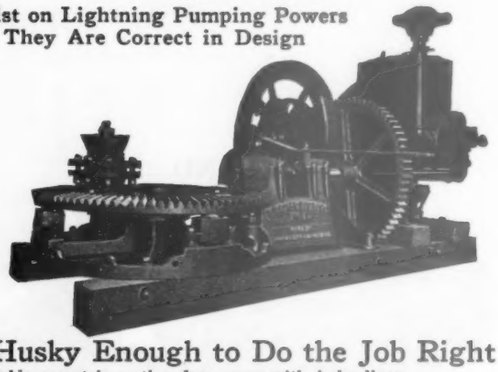

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The reliable eccentric motion does away with jerky lines.
Built in three sizes:
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Turntable gear is easily removable and having a broad face, coarse teeth and large diameter will stand up to the heaviest loads.
Shackle lines set low to the ground (13 in.) eliminate excessive strain. Quickly installed.

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This Governor automatically feeds gas to the boiler furnace in such qautity as to maintain a constant given steam pressure under varying conditions of load.

It consists of a set of valves opened by a weighted lever and closed by the steam pressure of the boiler, thus admitting or shutting off the gas as the demand for steam on the boiler varies.

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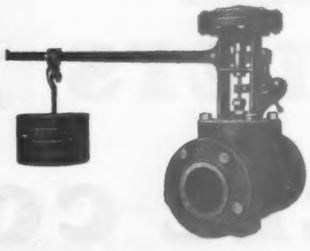

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41

YEAR'S WELFARE WORK OF IMPERIAL OIL, LTD.

CHATHAM, Ont., Feb. 28.—The annuities and benefits committee of Imperial Oil, Ltd., has completed another year's work, the committee consisting of Chairman P. F. Sinclair, C. Dean, W. B. Elsworth, E. V. A. Kennedy, E. A. Olver, T. D. Cummings and G. L. Thompson, secretary.

Under the scheme inaugurated some years ago, employes who have completed 12 months' continuous service with the company become eligible for death benefits in amounts ranging from $500 to $2,000 according to length of service and earnings. On December 31, 1924, there were 4,800 employes eligible for death benefits, the amount of insurance on these employes averaging $1,173, an increase of $61 over 1923. The aggregate of such insurance in force amounted to $5,634,971. During the year there were 27 deaths, four less than in 1923, the death benefits aggregating $35,078, an average of $1,299, which was an increase of $74 over the previous year. Of the 27 employes who died, 12 carried no other insurance while five others were insured in amounts under $1,000. Death benefits are paid to beneficiaries in 12 monthly installments, thus assisting them over the period of readjustment.

Correct total figures for the sickness and accident disability scheme have not been compiled, but unrevised figures show during the year 2,700 cases of sickness, with 18,077 days lost, the sickness benefits being over $56,000. During the same period over 1,300 accident cases resulted in about 4,500 days lost. Accident benefits amounted to about $7,000. While the number of accidents increased over 1923, less time was lost through accidents, the accident benefits in 1923 amounting to $15,000.

For accidents incurred by employes on duty disability benefits are paid in accordance with the provisions of the Workmen's Compensation Act. In all the provinces except Quebec and Saskatchewan, such cases are handled through the Compensation Boards. In Quebec and Saskatchewan they are looked after by the company. Where an employe meets with an accident while not on duty, this is treated as a sickness case and sickness benefits are paid by the company. The company's plan is thus much wider in scope than the Workmen's Compensation Act.

It is noteworthy that both the number of temporary employes and the number of insured employes leaving the company in 1924 were less than in 1923; the benefit evidently contributing to stability.

Another feature of the Imperial Oil, Ltd., welfare work is the Joint Industrial Councils. Six of these councils represent the six refineries of the company, while ten represents the ten marketing divisions. During 1924, 67 meetings were held and some 266 matters, covering such questions as wages, working conditions, promotions and discharges, hour of work, industrial representation and sanitation, housing and social work, were dealt with. The council elections were held for the most part between December 1 and 15 large percentages, in some cases the full 100 per cent of the employes voting for their representatives.

GASOLINE TAX FOR JERSEY

Five members of the New Jersey Legislative Commission on Motor Vehicle Taxation, in a minority report, urge that the motor vehicle share in the cost of new highway construction, now borne entirely by general property taxation. A gasoline tax of 2 cents a gallon, a driver's license fee of $5, a flat fee of $3 for passenger cars and buses carrying eight passengers or less are urged. Motor vehicle revenues under the schedules would be increased $3,500,000 over 1924. The gasoline tax is estimated to yield nearly $4,500,000 and trucks would pay $1,500,000 more.

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Whenever you want to buy or sell ANYTHING use the Classified Wants Section of your "Journal." It will help you.

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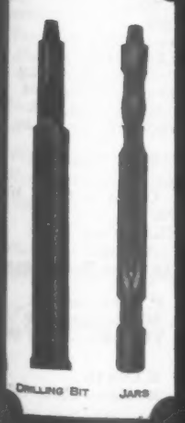

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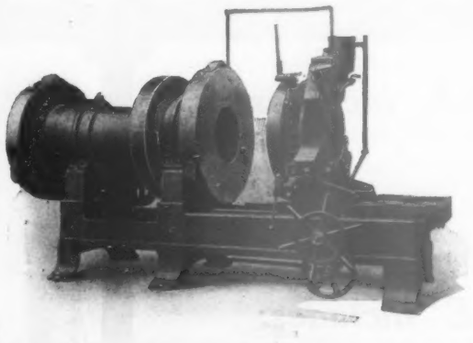

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South American Oil In U. S. Refineries Increasing Rapidly

By N. O. Fanning

NEW YORK, Feb. 28.—The use of South American oil in domestic coastal refineries is growing rapidly. It was recently announced that the Gulf Refining Co. planned to make regular deliveries of Venezuelan crude to its Port Arthur refinery. However, there are two refineries on the Atlantic Coast now being run largely on South American oil. These are the Fall River plant of the New England Oil Refining Co. and the Charleston plant of the Standard Oil Co. of New Jersey.

The New England Oil Refining Co. has a 30,000-bbl. refinery at Fall River, Mass., which produces gasoline, kerosene, gas and fuel oils and asphalt. It has been using Mexican crude for several years, with some Mid-Continent and California oil besides. The first shipment of Venezuelan crude arrived January 28, and since then two additional cargoes arrived.

The company, it is understood, has a contract with the Lago Petroleum Corp., which is supplying New England Oil with between 5,000 and 10,000 bbls. of crude daily. Lago is shipping the oil from its terminal at Aruba. Its production comes from the La Rosa district.

Standard Oil Co. of New Jersey is running Peruvian crude at its Charleston refinery. The plant has a capacity of 10,000 bbls. daily, and it is getting about that much Peruvian crude at present. Shipments started about February 1.

In connection with the use of South American oil in these refineries, it is interesting to note that both plants were built with the original intention of running them on Mexican crude almost entirely. At that time Mexican crude was more plentiful. When production in Mexico declined at the close of 1922, both plants turned partly to California oil. The situation now is that both California and Mexican crudes are scarce, and prices have advanced to a point where it is more economical to use South American oil.

Venezuela is as near (or nearer) Fall River than is Tampico, and only about two-thirds as far away as San Pedro, the shipping terminal for the southern California oil fields. A month ago Mexican oil prices advanced to a point where it was considered uneconomical to buy, and furthermore, any considerable amount was not to be had.

These two plants are not the only ones on the Atlantic Coast using South American oil. The Bayonne refinery of the Standard Oil Co. of New Jersey has used a comparatively small amount of Peruvian crude for years.

In addition fuel oil from Venezuela and Trinidad is being shipped to New York regularly under contracts with shipping agents. In some instances crude is shipped, run to a refinery here and the fuel oil turned over to the shipping companies.

NO GASOLINE SUITS SEEN AT WASHINGTON

WASHINGTON, Feb. 28.—Declaring the Department of Justice intends to institute antitrust suits on the basis of the Federal Trade Commission reports of its investigation of the gasoline industry, Senator Moses (Rep.) New Hampshire, objected in the Senate to consideration of the resolution by Senator Trammell (Dem.), Florida, calling upon the commission for the report. The commission's investigation was concluded last summer.

At the Department of Justice it was said there are at least three investigations under way which concern the gasoline industry directly or indirectly, but none has approached the stage where the department could decided on its course. It was added that there are no suits pending or immediately contemplated as a result of the Federal Trade Commission's findings.

The department's view of the commis-

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sion's report is that the recommendations were not specific, and the department therefore was compelled to go over the whole field again before being able to determine what could be done.

A. T. Seymour, assistant to the attorney general, in charge of antitrust prosecutions, explained that the gasoline inquiry was changing hour by hour and he added that the department was attempting no move against it except where evidence susceptible of absolute proof was discovered.

BRIEFS TO BE FILED IN EXPORT RATE CASE

Those interested in The Texas Co. export case, hearings on which were concluded at Houston, Tex., on February 10, have been given until April 15 to file their briefs with the Interstate Commerce Commission. This case in which The Texas Co. is plaintiff and certain carriers the defendants, involves export rates from Mid-Continent points. Due to this fact the Western Petroleum Refiners Association represented by P. A. Conway, commerce counsel of the association, and several refining companies are intervenors. In its original complaint The Texas Co. asked that export and domestic rates be made the same from Mid-Continent points.

At the Houston hearing The Texas Co., while not abandoning the issue raised by the complaint confined its evidence to two issues only. The first issue was concerned with port equalization and second discrimination as between Port Arthur, Port Nechez and other Gulf ports. In regard to the latter the company took the position that domestic, export and coastwise rates should be equalized. The company did not suggest definitely how this should be done but expressed the opinion it would be satisfactory if the export and coastwise rates were raised to the domestic basis.

In this contention it was opposed by the Western Petroleum Refiners Association, Cosden & Co., Texhoma Oil & Refining Co., Phillips Petroleum Co. and several other companies and commercial organizations located in the Gulf Coast area. Confidence is expressed by the defendants and intervenors that the case will be dismissed. The hearing will held before Examiner C. K. Seal.

PERSIA SHORT OF LUBS

There appears to be a market in northern Persia for American lubricating oils. Although such oils are already being shipped to Gulf ports and to Iraq, they have not yet reached northern cities, such as Teheran. Probably 1,500 automobiles are without proper lubrication. The cars running regularly between Teheran and Bagdad have to carry with them sufficient oil for the round trip. At present the only lubricating oil obtainable in this part of Persia is Russian oil of no brand and poor quality. For this oil the price in Teheran is $21 per can of 18 liters.

DEATH OF V. C. LAMB

CHATHAM, Ont., Feb. 28.—Word was received recently in Edmonton of the death in California of V. C. Lamb, formerly assistant superintendent for the British Petroleums, Ltd., in the Irma-Wainwright Field. Mr. Lamb left Wainwright for California last fall, shortly after British Petroleums' No. 4 was brought in, to take a position with the Pacific General Electrical Co. at Oroville, Cal. Death was due to shock and electric burns as the result of an accident.

WILL START TEST IN ARIZONA

The San Simon Valley News, published in Bowie, Cochise County, Arizona, on February 13, says the Bowie-San Simon Oil Syndicate will start spudding a test on the Herman ranch, 4 miles east of Bowie, on February 28. The derrick is up and the tools, engine, boiler and a carload of coal were on the ground as an evidence of good faith. The syndicate has blocked acreage on what the newspaper says is a large structure.

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TELLS OF CONDITIONS IN MEXIA FAULT ZONE

(Continued from Page 84)

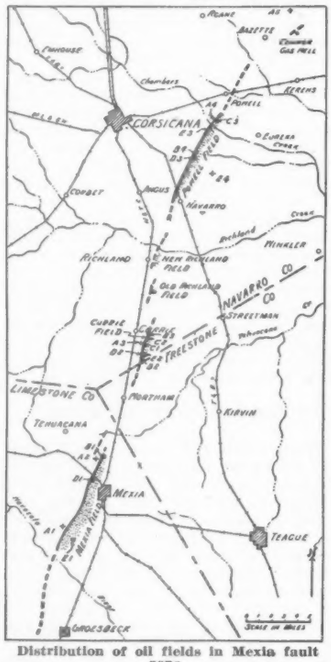
fault structures of the Mexia type. The vertical lines represent relative positions of wells used by Doctor Lahee to show the importance of well logs, but they also show the reader how far west of the surface indication of faulting a well may be drilled to the Woodbine sand and find production, and how the next well to the west may miss the upper Woodbine series altogether. The diagram also shows the significance of the Austin chalk as a marker for the Woodbine pay.

Suggestions in Drilling

Doctor Lahee makes the following suggestions in reference to holes drilled within or near the Mexia fault zone:

Suppose that the approximate general trend of the fault zone is known and that a hole is drilled somewhat east of this trend. The log records Austin chalk of normal thickness and distinctly low as compared with the expected depth. This hole probably lies a considerable distance east of the fault and possibly east of any oil pool that may be associated with the fault.

A hole that is being drilled supposedly in the trend but with the possibility of being west of it does not encounter the Austin chalk until it has reached a surprisingly great depth. Often the drillers of wells like this one report high chalk, but as the hole is deepened this chalk



Distribution of oil fields in Mexia fault zone.

proves to be interrupted by shale breaks, and about where the drill should go through the true Austin chalk, it enters the typical chalk and continues in this for 400 feet more or less. This "high chalk" or "Taylor chalk" is much like the true Austin chalk and has deceived the drillers in many holes that eventually turned out to be dry.

Suppose that on a certain property, a well has been obtained producing from the Woodbine sand and that the log shows the Austin chalk and the Eagle Ford shale of normal thickness and at about the depth where they should be in a well several hundred feet east of the fault. On the assumption that the fault has its usual characteristics the proper procedure in developing the property would be to drill the next location westward (either west, southwest or northwest, in this region). If this second test revealed normal stratigraphic conditions the next well should be drilled again to the west, and this procedure should be followed either to the western boundary of the lease or until the last hole drilled shows relatively thin chalk. With the log as a basis for calculations, whether

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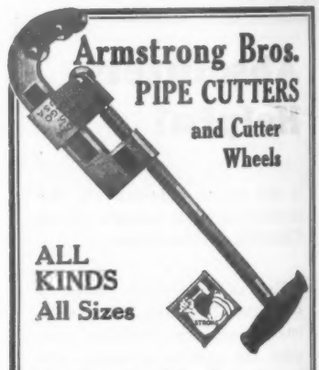

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the next location west of this thin-chalk well could be safely drilled may be estimated, assuming that the fault has a maximum dip. The method is illustrated in Figure 2. Here is the Austin chalk in the last well drilled (N1), *bc* is the Eagle Ford shale, and *cd* is the producing zone in the Woodbine formation. The record (in the illustration) starts at 1,700 feet below sea level. The figure (except for width of logs) is drawn to true scale, vertical and horizontal. The Austin chalk is only 350 feet thick, but the Eagle Ford shale has normal thickness. The fault cuts the top of the Austin chalk (see D, Figure 1). Therefore from *a* draw a line *ae* to represent the fault, making an angle of 65 degrees with the horizontal, which would probably be its maximum dip. At 300 feet to the west of *N1* draw *N2* to represent the position of the next hole that would be drilled, going westward. If the fault line *ae* cuts *N2* above the probable position of the Woodbine pay zone, *st*, the drilling of this well, *N2*, is fairly safe.

Suppose that well *N2* is drilled and that its log shows very thin and rather low chalk. To determine whether another location to the west could be drilled construct a vertical cross section (Figure 3) with the logs of wells *N1* and *N2* plotted correctly to scale. From *a* (the same as *a* in Figure 2) draw *ah* and *ai* and produce these lines to *g* and *f*, respectively. These lines mark the limits

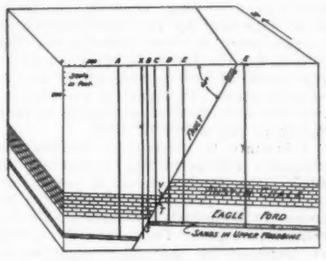

Diagram showing general conditions attending fault structures of Mexia type.

within which the fault must lie if it is essentially straight in cross section. We cannot tell whether it cuts the chalk in well *N2* at *h* or at *i* or between *h* and *i*. Draw *N3* to represent a well at the next location westward, here 300 feet from *N2*. The fault line *af* would cut the Woodbine pay zone some distance east of location *N3* and fault line *ag* would cut this pay zone practically in *N3*. In the first case *N3* would probably be a dry hole in this pay zone, and in the second case *N3* might be dry, or it might be a well in the drag of the pay zone, essentially in the fault. In either case it might run into water under strong pressure, a feature not uncommon in the fault zone. Location *N3* would therefore best be left undrilled until possibly later development showed that the drag zone was productive in the particular district or that deper drilling might penetrate a productive zone below that represented in Figures 2 and 3 and still be east of the fault.

ARTESIA, N. M., WELL IN

ARTESIA, N. M., Feb. 28.—Shot with 220 quarts of nitroglycerin, the Rotary Oil Co.'s No. 1 well in Section 30-18-28 is now a producer. That it will class with the wells of Flynn, Welch & Yates is the opinion of oil men who witnessed the shooting. Keys and others' No. 1 well is also drilling in and will be shot. Two others that will be given light shots are the Picher No. 1 and the California No. 1. From all indications it appears necessary to shoot all wells in this field as the sand is firmly packed. Two new locations have been announced, one to be drilled in the southern part of Township 17-39 and the other in Section 1-19-24. This latter test will be put down by the Ohio Oil Co., which owns a large amount of acreage. Tools are now being moved to the lease.

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Chairman de Golyer Believes 1925 Will Be Prosperous Oil Year

By E. de Golyer

*Retiring Chairman, Petroleum Division, American Institute of Mining and Metallurgical Engineers**

The outlook for the present year is for increasing consumption in excess of production, and a considerable draught on stocks. No pool of indicated bonanza proportions is in sight, and bonanza pools of 1923 and 1924 are all at last on a real decline. Prices for crude and refined products have been increased considerably and the outlook is for a prosperous year.

One cannot fail to note, however, that this is the optimistic season of the year, and that conditions resemble most markedly those which existed at this season in both 1923 and 1924, when optimistic forecasts failed signally. It remains to be seen what effect price increases will have in bringing out new production. As was noted by Mr. Teagle, before the American Petroleum Institute at Fort Worth, Tex., price increases are in effect orders for new production. The producer has generally filled these orders in the past and there is no doubt but what he will try to do so in the future. If, however, one considers the supply and demand of crude oil over a period of several years, it will be seen that we have been dealing with a cycle of overproduction, too large to be expressed by the consideration of a single year. It seems probable that the outlook for the future is for a considerable period of underproduction, or at the worst, a period of alternating overproduction and underproduction similar to that ending in the middle of 1920.

I hesitate to attempt to outline the prospects for petroleum production in 1925. The foreign fields of major importance give promise of considerable increase in Venezuela, of appreciable increases in Russia, Persia and Peru, and of increases in the other countries of major production, with perhaps the commencement of real petroleum production in Germany. The prospect is for further decline in Mexico or at least a continued decrease in the production of light oil and an increase in the production of heavy oil. No change in foreign production can be seen which is of magnitude great enough to influence the oil market of the United States.

There is no indication at the present time that the production of the United States will be as great in 1925 as it was in 1924. The best estimate is that it will be less, but price increases have brought the oil in the past and it woud be unwise to assume that they will fail to do so at the present.

This is the season of optimism, the season when the voice of the independent refiner is heard abroad in the land offering premiums for crude to meet his summer requirements. At this time in 1923 we were optimistic, and again in 1924. The entire industry is optimistic now; and the entire industry suffered badly from overproduction in 1923 and again in 1924. It may be that history will repeat itself again in 1925, but having cautioned myself sufficiently by recalling the disasters which followed the constant recurrence of the "unexpected" and "improbable" in the producing end of the business, I must admit that it is my sincere belief that the demand for petroleum during the present year will be greater than current supply, and that the year will be a prosperous one for the industry.

*Delivered at annual meeting.

VENEZUELAN LAND HOLDING

A form of corporate activity peculiar to the Venezuelan oil fields is the oil land holding companies. There were six of these companies operating in May, 1924. There are now five additional companies announced, the Venezuelan Holding Corp., American Maracaibo Co., Condor Oil Co. of Venezuela, Inc., Andes Petroleum Corp., Maxudian Petroleum Corp.

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CONSERVATION TOPIC AT WYOMING'S CLUB

CASPER, Wyo., Feb. 28.—The Wyoming Petroleum Club held its semi-monthly meeting at the Natrona County Courthouse last week with a large attendance. After a talk on the black oil fields in western Wyoming was given by H. J. Lowe of the Bureau of Mines, Fred Wood of the engineering department of the Midwest Refining Co. read a paper on conservation of oil that caused considerable discussion. Mr. Wood contended that an oil field can be better handled for the public good if owned and operated by a single organization instead of having competition in the operation through the leases being held by several different firms. This called forth much discussion from the audience of oil men.

Mr. Wood agreed that where a single company, as in the case of the Midwest Refining Co. at Salt Creek, controlled all the producing area, the oil was conserved in the ground at times of depression, while it could also be drawn upon to the limit of production in times of need. This condition exists in the first Wall Creek sand in the Salt Creek Field, where the Midwest Refining Co., through its subsidiaries, controls all the productive area of this sand. When the oil market was low and the production of the crude mainly going to storage, the Midwest simply shut down much of the first sand production and as soon as the market advanced, the wells were again opened and put to pumping.

It is also considered by Mr. Wood that the Midwest will have practical control of the new Lakota sand area in that field in the same way and that this new body of oil will therefore be held in a conservative manner and produced for the best interests of the public instead of being thrown upon the market whether the time is siutable or not.

Due to the absence of Chairman E. L. Estabrook, who is in New York attending the mining congress, Vice President A. J. Hazlett occupied the chair.

ASKS EXTENSION FOR OIL AND GAS PERMITS

WASHINGTON, Feb. 28.—The House resolution introduced by Mr. Sutherland proposes to extend until July 31, 1926, the time of oil and gas permittees within which to begin operations or to drill wells. The resolution reads as follows:

"That in all cases where the holders of oil and gas prospecting permits issued by the Secretary of the Interior under the act of Congress of February 25, 1920, entitled 'An Act to Promote the Mining of Coal, Phosphate, Oil, Oil Shale, Gas and Sodium on the Public Domain' have been unable because of lack of transportation facilities, wharves or roads to remove machinery to the ground covered by said permits, and to begin drilling operations or to drill wells to a depth and within the time prescribed by section 13 of the act of Congress approved February 25, 1920, entitled 'An Act to Promote the Mining of Coal, Phosphate, Oil, Oil Shale, Gas and Sodium on the Public Domain,' the time of such permittees to begin such drilling operations be, and the same is hereby, extended to and including July 31, 1926."

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The Baldwin Locomotive Co., in conjunction with the Knudson Motor Co., and the Westinghouse Electric Co., is building a Diesel engine, said to have the necessary compactness and lightness of weight for use in locomotives. The new Diesel electric locomotive was designed by Knudson. The engine has only two cycles and its first run on February 11, before its generator was installed, showed it to exceed 1,250 revolutions per minutes. When it is ready for its first road test, it is hoped its fuel cost will be about one-fourth that of a coal steam locomotive of an equivalent size. Fuel consumption is estimated at 345 pounds of fuel per horse power per hour.

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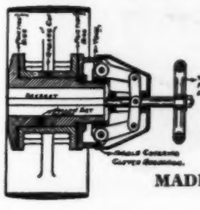

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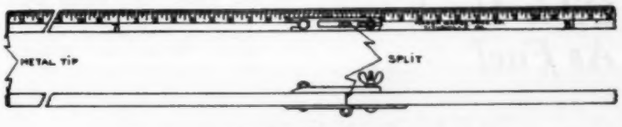

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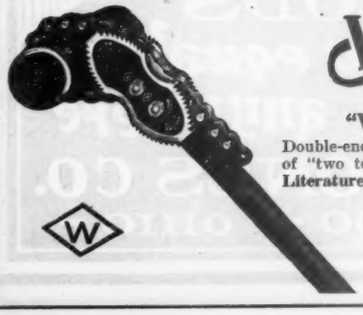
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TEXAS CITIES FIGHT COX UTILITIES LAW

AUSTIN, Tex., Feb. 28.—Supporters of the Moore bill for repeal of the Cox gas utilities law proved they have a majority in the Senate when they blocked the recommitment of the bill to a committee, which Senator J. D. Parnell charged would in effect kill the measure. Senator Moore of Cooke County and Senator Farnell of Wichita County led the fight to save the bill. A committee substitute measure which modifies the present law eliminating the two features objectionable to Texas cities, was before the Senate on a favorable report. The railroad commission would be stripped of power to override a city ordinance regulating gas rates, and the venue of suits would be in the county where a controversy arose rather than in Travis County, under the terms of the amendment. The committee bill is satisfactory in general to the proponents. Senator Parnell explained the controversy Wichita Falls has had because of the contract between the Lone Star Co., which serves the distributing company, and the local distributing compay, and of the action of the Texas Railroad Commission in ordering the 50-cent per meter "ready to serve charge." Cities complaining of the Cox law, Senator Moore said are: Wichita Falls, Gainesville, Sherman, Denison, Bowie, Alvarado, Whitesboro, Waxahachie, Decatur, Ennis and others in north Texas.

The vote was 12 to 14 for sending the bill back to committee; after which it was "laid on the table subject to call," while Senator W. C. Woodward of Coleman and other opponents prepare amendments. The same bill is pending in the House.

BILL NOT STEP TO GOVERNMENT IN OIL

(Continued from Page 122)

tary of the Navy, and the Secretary of the Interior. That any person violating any of the provisions of this section shall be guilty of a misdemeanor and shall be punished by a fine of not more than $5,000 or by imprisonment for not more than one year, or by both such fine and imprisonment, and the Federal courts of the United States are hereby granted jurisdiction to try and determine all questions arising under this section.

Since Doctor Lyon wrote, the Senate has passed the helium bill, with the provision that production be in control of the Department of the Interior. As the House had proposed that control be in the hands of the Navy Department the measure must go to conference committee.

NEW ASPHALT CONCESSION

A new British corporation, Trinidad Lake Asphalt, Ltd., a subsidiary of General Asphalt, has been granted the right to operate the asphalt lakes in Trinidad for 21 years beginning February 1, 1930, when the present concession expires. In operating under the new lease from 1930, the charge for royalties and export duties to be borne by the industry will not exceed such charges while operating under the existing concession.

OIL TANK BOATS IN JAPAN

The municipal authorities of Nagasaki, Japan, are contemplating the construction of oil tank boats in order to facilitate the supply of fuel oil to steamers visiting the port and to encourage others to do so for the purpose of taking oil. It was at first proposed, according to the Nagasaki Press, to construct tanks ashore for the purpose, but owing to some difficulties it is now suggested that two tank boats of 400 tons each shall be built, the total cost being estimated at 75,000 yen.

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dependent operators in the Mid-Continent fields, died at his home in Tulsa last Thursday of pneumonia. He had been ill one week. Mr. Reynolds was associated with George Sneddon, and also was vice president of the Jones Oil Well Reamer Co., which he helped to organize.

DEATH OF F. D. MURPHY

HOUSTON, Tex., Feb. 28.—Francis D. Murphy, general manager and a director of the Houston Gas & Fuel Co., died at his home here recently, aged 41 years. He was born in Elmira, N. Y., and commenced his business career in the offices of the Oil City Boiler Works at Oil Co, Pa. Later he went to Altoona, Pa., as manager of the Altoona Gas & Light Co. He came to Huston 13 years ago.

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Pages 102-103-104
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LEGALS

TRIBAL OSAGE OIL LEASES AT PUBLIC AUCTION, MARCH 18, 1925, BY U. S. GOVERNMENT

March 18, 1925, at Pawhuska, Oklahoma, about 56,000 acres will be offered for oil leases in quarter section tracts. Bids will be for bonus in addition to royalties, 25% payable on day of sale, balance in three annual installments, with acceptable security. Within advertised area there are about 9,250 oil wells producing from one barrel to two thousand barrels each, the total daily production for December, 1924, being about 90,000 barrels; also, there are about 125 wells drilling. All lands are now leased separately for gas. Blue print maps of area advertised, showing tracts producing oil or gas, can be had for fifty cents each, also logs of producing oil or gas wells for twenty-five cents each well. Write U. S. Superintendent, Osage Agency, Pawhuska, Oklahoma, for maps, logs, or other information.

DEPARTMENT OF THE INTERIOR, UNITED STATES LAND OFFICE, BATON ROUGE, LOUISIANA

Notice is hereby given that the following described land in the Caddo oil field, Caddo Parish, Louisiana, is offered for oil and gas lease under Sec. 17 of the act of February 25, 1920 (41 Stat., 437), at the standard royalty fixed for departmental leases varying from 12½ to 33⅓% of the oil produced, depending upon daily production per well, subject to reduction at discretion of lessor when average daily production of any well shall not exceed ten barrels per day; and 12½ to 16⅔% of casing-head gasoline, and an annual rental of $1 per acre, payable in advance, which will be credited against royalties as they accrue for that year.

TRACT A: Lot 4, Sec. 5, (14.10 acres), T. 20 N., R. 16W. There is a well situated upon this tract which has had a settled production of about ten barrels of oil per day for several years. By use of vacuum pumping a considerable volume of casing-head gas is being produced. This tract will be sold subject to a satisfactory guarantee by the successful bidder that he will immediately furnish and supply to said well satisfactory vacuum connection. Further guarantee as to a water supply will be required. This well is equipped with all machinery necessary to its operation, having an estimated value of $2000. This machinery is now the property of the United States and all bids are to be accepted subject to payment of the appraised price for machinery, an inventory of which may be seen on day of sale.

Said tract will be offered for sale at public auction at the Federal Court Room, Post Office Building, Shreveport, Louisiana, at 10 A. M. on March 10, 1925, and sold to the qualified bidder offering the highest bonus at the stated royalty. The successful bidder must deposit on day of sale a certified check upon a solvent bank or cash for one-fifth of the amount of each bid, and file the showing of qualifications to receive a lease as required by Sec. 15 of circular 672 oil and gas regulations, as to citizenship and ownership in other permits and leases. The remaining four-fifths of the bid must be paid upon issuance of lease. Plat showing location of tract offered and circular 672 may be secured from the U. S. land office, Baton Rouge, Louisiana, or General Land Office, Washington, D. C.

The bidders are warned against violation of the provisions of Sec. 59 of the U. S. Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders.

The right is reserved to reject any or all bids in the discretion of the Secretary of the Interior.

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS PIPE LINE REPORT FOR DECEMBER

Runs

*Prairie P. L. Co.	3,255,000	105,000
Gulf P. L. Co.	1,246,402	40,207
Texas Pipe Line Co.	422,560	13,631
Magnolia Petroleum Co.	1,295,875	41,802
Empire Pipe Line Co.	867,313	27,978
Cosden Pipe Line Co.	795,149	25,649
*Sinclair Pipe Line Co.	1,016,800	32,800
*Other lines	9,300,000	300,000
Total	18,199,099	587,067
Total	18,145,414	604,847
Difference	53,685	17,780

Shipments

*Prairie Pipe Line Co.	3,857,754	124,444
Gulf Pipe Line Co.	1,023,695	33,020
Texas Pipe Line Co.	679,619	21,923
Magnolia Petroleum Co.	1,444,415	46,594
Empire Pipe Line Co.	1,029,203	33,200
Cosden Pipe Line Co.	923,597	29,793
*Sinclair Pipe Line Co.	2,592,857	83,641
Other lines	9,920,000	320,000
Total	21,471,050	692,615
Total	19,657,511	655,250
Difference	1,713,539	37,365

Stocks

	Bbls.
*Prairie Oil & Gas Co.	26,300,000
*Prairie Pipe Line Co.	2,000,000
Gulf Pipe Line Co. and Gypsy Oil Co.	
Gulf Pipe Line Co. and Gypsy Oil Co.	9,932,241
The Texas Co.	5,438,138
Magnolia Petroleum Co.	9,249,378
Empire Pipe Line Co.	2,980,745
Cosden Pipe Line Co.	2,731,377
*Sinclair Crude Oil Purchasing Co.	28,300,000
Carter Oil Co.	16,935,319
*Other lines	10,500,000
Total	114,467,198
Total	116,255,812
Difference	1,788,614

*Estimated. †Prairie shipments include also Texas crude, Sinclair shipments include also Texas and Wyoming crude.

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for December and January:

	Dec., '24	Jan., '25
Nat. Transit	146,919.77	158,224.95
S. W. Pa. P. L.	77,055.69	75,622.06
Eureka P. L.	325,500.22	336,785.07
Buckeye P. L. (Macksburg)	268,099.71	270,937.24
Buckeye P. L. (Cleveland)	11,908.43	11,783.31
Buckeye P. L. (Lima, etc.)	116,342.97	119,433.03
Indiana P. L.	9,313.04	9,562.51
Cumberland P. L.	322,426.69	316,512.12
N. Y. Transit	18,225.59	17,233.29
Tidewater P. L.	124,235.50	125,723.35
Pure Oil	181,667.26	184,170.99
Emery P. L.	41,081.18	43,635.37
Indian Ref.	46,543.37	50,678.03
Paragon Dev.	33,306.81	34,625.09
Pittsburgh P. L.	7,614.22	6,841.87
Total	1,730,240.45	1,761,768.28
Daily average	55,814.21	56,831.23

Note — Indian Refining Co. also reported other receipts of 340,336.73 bbls. Paragon Refining Co. had other receipts of 93,270.33 bbls. Paragon Development Co. had other receipts of 3,465.80 bbls. Pittsburgh Pipe Line had other receipts of 2,012.44 bbls.

Petroleum Deliveries

The following tables exhibit the shipments of regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for December and January:

	Dec., '24	Jan., '25
Nat. Transit	344,060.58	430,479.78
S. W. Pa. P. L.	330,866.53	352,482.72
Eureka P. L.	103,380.36	104,202.98
Buckeye P. L. (Macksburg)	98,280.80	108,833.21
Buckeye P. L. (Cleveland)	1,456.53	971.46
Buckeye P. L. (Lima, etc.)	775,736.14	737,449.65
Indiana P. L.	1,178,592.89	1,184,796.12
Cumberland P. L.	147,345.46	151,651.28
N. Y. Transit	671,474.49	833,143.35
North P. L.	131,021.77	127,033.43
Tidewater	143,854.20	123,127.50
Pure Oil	162,869.97	184,953.81
Emery P. L.	42,781.09	42,468.57
Paragon Ref.	105,948.04	86,990.07
Indian Ref.	412,965.43	396,223.19
Paragon Dev.	33,647.32	19,862.12
Pittsburgh P. L.	8,857.56	9,893.15
Total	4,693,138.16	4,894,563.29
Daily average	151,391.55	157,889.13

Indian Refining Co. had other deliveries of 5,115.72 bbls.

Gross Stocks

The gross stocks held by various pipe lines in the oil producing section of New York, Pennsylvania, West Virginia, Indiana and Kentucky at the close of December and January were as follows:

	Dec., '24	Jan., '25
Nat. Transit	968,729.73	997,527.01
S. W. Pa. P. L.	635,754.50	671,822.11
Eureka P. L.	1,860,765.64	1,703,887.63
Buckeye P. L. (Macksburg)	369,027.80	327,725.42
Buckeye P. L. (Cleveland)	57,701.66	37,659.69
Buckeye P. L. (Lima)	3,726,305.85	3,556,916.92
Indiana P. L.	613,810.50	617,271.50
Cumberland P. L.	607,353.62	627,024.27
South P. L.	550,124.39	505,691.07
Crescent P. L.	58,176.73	58,217.64
N. Y. Transit	620,729.14	718,889.21
North P. L.	976,983.74	989,912.28
Pure Oil	415,288.64	407,274.06
Emery P. L.	7,841.43	8,880.37
Paragon Ref.	36,658.11	42,815.50
Indian Ref.	69,804.95	64,092.91
Paragon Dev.	13,149.94	13,161.62
Pitts. P. L.	5,479.15	4,506.45
Total	11,583,679.52	11,353,275.66
Decrease	684,850.24	230,403.86

Grades of Oil

The following table shows the amount of the different grades of oil held by the Eastern pipe lines at the close of December and January showing the gross stocks of the above fields:

	Dec., '24	Jan., '25
Penna	3,932,186.36	3,892,776.91
Lima	1,343,428.02	1,289,019.05
Kentucky	1,408,856.79	1,421,861.94
Mid-Continent	4,851,486.54	4,711,600.48
Illinois	47,721.81	38,017.28
Total	11,583,679.52	11,353,275.66

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1922	1923	1924	1925
January	67,702	75,790	62,638	56,831
February	75,096	71,092	68,023	.....
March	78,531	76,592	68,721	.....
April	75,469	75,614	71,058	.....
May	77,592	77,365	63,942	.....
June	76,193	77,593	63,230	.....
July	76,435	71,879	64,208	.....
August	79,387	76,910	59,942	.....
September	78,512	72,358	62,930	.....
October	77,209	76,256	64,976	.....
November	75,313	70,762	56,282	.....
December	73,351	69,271	55,814	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1922	1923	1924	1925
January	119,792	171,067	145,518	157,889
February	111,362	164,219	148,732	.....
March	127,753	185,487	147,098	.....
April	127,068	170,781	147,611	.....
May	127,840	177,102	134,997	.....
June	137,638	173,598	143,010	.....
July	137,872	168,330	124,187	.....
August	153,275	142,766	123,120	.....
September	158,761	137,266	127,325	.....
October	165,345	134,597	123,170	.....
November	165,677	131,426	124,400	.....
December	127,861	139,909	151,392	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields including oil received from other lines, at the close of each month for the past three years:

January	14,040,567	12,907,202	11,353,276
February	14,028,437	11,844,068	.....
March	13,873,146	10,906,752	.....
April	13,737,575	10,922,743	.....
May	13,815,622	11,335,309	.....
June	14,541,253	11,544,204	.....
July	14,646,584	12,062,361	.....
August	14,770,539	12,221,676	.....
September	14,803,444	12,206,836	.....
October	14,504,111	12,664,961	.....
November	14,157,726	12,268,539	.....
December	13,444,361	11,583,680	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above:

	Receipts	Shipm'ts	Stocks
1924—			
January	2,942.19	8,641.71	9,848.75
February	2,151.78	1,926.56	10,073.91
March	3,398.78	1,716.28	11,756.41
April	3,311.84	2,066.78	13,001.54
May	3,036.50	5,338.21	10,699.83
June	3,188.31	407.01	12,481.13
July	3,067.74	3,334.29	13,214.58
August	2,901.36	6.21	16,109.73
September	2,794.58	5,775.89	13,128.42
October	3,342.40	1,880.50	14,590.32
November	2,700.13	482.89	12,427.56
December	3,120.34	2,659.13	12,888.77
1925—			
January	1,730.86	1,681.15	12,938.48

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, Feb. 1	2,324,570.06
Runs from wells	666,779.07
Other receipts	501,680.94
Regular deliveries	572,304.77
Other deliveries	371,368.43

The amount of Illinois oil run by the Tidewater Pipe Line Co. in January was 28,734.36 bbls., and deliveries were nothing. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries from the Illinois Field as follows:

1924—	Runs	Deliveries
January	493,337.25	280,792.09
February	535,490.70	353,613.14
March	611,289.36	369,542.51
April	514,356.43	338,546.10
May	751,080.44	510,414.43
June	725,060.87	528,402.38
July	759,646.84	552,396.50
August	720,457.72	519,335.79
September	714,875.36	536,762.50
October	741,767.42	543,863.77
November	650,147.63	521,459.21
December	640,919.23	595,942.28
1925—		
January	695,513.43	572,304.77

The Tidewater Pipe Co., Ltd., also delivered in January 477,275.32 bbls. of Oklahoma oil. The total deliveries of all grades by the Tidewater were 600,402.82 bbls.

AVERAGE WEEKLY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF PORTS

Av. bbls. per wk.—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Pt. Arthur Sabine Pass	Tampa	Total	Total All Ports
July	27,710	16,129	478,516	84,453	42,463	654,249	.....	16,926	.....	.....	.....	671,175
August	114,022	33,419	654,227	71,806	33,271	907,515	907,515	.....	6,774	.....	.....	914,289
September	67,670	34,531	638,617	76,200	18,900	836,018	.....	.....	.....	.....	.....	836,018
October	85,379	49,000	537,948	85,603	36,127	794,056	.....	.....	.....	.....	.....	794,056

AVERAGE WEEKLY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Av. bbls. per wk.—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Pt. Arthur Sabine Pass	Tampa	Total	Total All Ports
May	156,485	134,602	288,903	69,613	300,097	949,699	315,679	295,358	198,691	38,164	848,792	1,798,491
June	120,169	108,731	434,931	68,131	239,400	971,362	412,741	251,762	159,831	35,831	860,185	1,839,547
July	62,097	81,291	446,067	38,418	277,970	904,843	520,194	272,455	136,739	94,978	759,361	1,666,204
August	80,839	87,356	347,710	98,903	307,065	921,873	370,549	238,477	116,839	14,677	739,743	1,661,616
September	101,969	45,028	193,200	77,000	204,969	622,066	255,329	215,000	141,170	20,300	731,799	1,353,865
October	136,836	67,515	357,418	90,818	113,127	665,704	251,903	268,616	111,097	29,351	640,967	1,306,671

GROSS PRODUCTION IN THE UNITED STATES FOR 12 MONTHS (Revised)

		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mountain	Eastern Fields	Total
January:	Month	20,912,500	12,292,333	10,522,143	2,223,878	3,686,680	1,601,575	4,447,089	2,942,050	58,628,698
	Daily average	674,597	396,543	339,424	71,738	118,925	51,664	143,453	94,905	1,891,946
February:	Month	19,341,226	12,236,437	10,238,052	2,112,853	3,302,750	1,504,450	3,996,251	2,984,000	55,716,019
	Daily average	666,939	421,952	353,036	72,857	113,887	51,877	137,791	102,896	1,921,243
March:	Month	19,913,262	12,336,851	12,044,503	2,306,426	3,882,695	1,701,593	3,827,204	3,250,600	61,163,134
	Daily average	642,363	430,321	388,532	71,175	125,247	54,890	123,460	104,858	1,975,006
April:	Month	19,299,849	13,452,240	11,577,246	2,268,540	4,068,225	1,495,582	3,736,332	3,273,600	58,175,614
	Daily average	643,328	448,408	385,908	75,618	135,608	49,853	124,611	109,120	1,939,193
May:	Month	19,833,576	14,247,697	11,623,395	2,459,765	4,659,117	1,596,701	3,866,010	3,264,000	61,550,261
	Daily average	639,793	459,603	374,948	79,347	150,288	51,507	124,710	105,042	1,985,493
June:	Month	18,807,999	14,447,390	11,602,350	2,469,380	4,756,443	1,812,580	3,638,634	3,253,600	60,788,386
	Daily average	626,933	481,580	386,745	82,313	158,548	60,429	121,288	108,453	2,026,279
July:	Month	19,274,755	15,191,860	11,917,137	2,671,053	4,597,969	1,815,966	3,768,398	3,271,600	62,508,720
	Daily average	621,766	490,060	384,424	86,195	148,322	58,580	121,561	108,761	2,019,637
August:	Month	19,112,998	16,525,356	11,808,876	2,717,398	4,359,241	1,702,525	3,749,375	3,286,000	63,261,769
	Daily average	616,548	533,076	380,931	87,658	140,621	54,920	120,948	106,000	2,046,702
September:	Month	18,308,233	16,299,080	11,089,492	2,638,900	4,029,535	1,795,575	3,330,007	3,150,000	60,646,772
	Daily average	610,274	543,301	369,650	87,963	134,318	59,853	111,000	101,936	2,021,589
October:	Month	18,696,559	16,189,898	10,942,005	2,768,455	3,983,696	1,774,707	3,058,268	3,295,000	60,598,589
	Daily average	603,115	522,255	353,000	89,305	128,506	57,249	98,654	109,516	1,951,607
November:	Month	17,767,034	15,956,620	10,731,264	2,597,460	3,461,050	1,965,921	2,788,110	2,941,000	58,207,459
	Daily average	592,234	531,854	357,709	86,582	115,035	65,531	92,937	98,033	1,940,349
December:	Month	18,796,126	16,021,185	11,264,915	2,537,443	3,350,511	1,879,876	2,302,888	3,000,950	59,153,794
	Daily average	606,294	517,136	363,384	81,853	109,049	60,351	74,287	96,402	1,908,186
	Total, 1924	230,063,117	176,306,397	135,261,278	29,671,551	48,167,912	20,638,051	42,610,516	38,113,300	730,731,220
	Daily average	628,586	481,437	369,840	81,070	131,606	56,385	116,149	104,132	1,989,311

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